BOSTON — ANNUAL MEETING, M. M. S. — MAY 21-22

Medical Library

The New England Journal of Medicine

Formerly The Boston Medical and Surgical Journal
Established 1828

Volume 222 MARCH 21, 1940 Number 12

MEDICAL EDUCATION 471
A. Lawrence Lowell

ALTERNATING TREMOR (PARALYSIS AGITANS) AND ATHETOSIS 473
Tracy J. Putnam

QUALITY OF MEDICINE 476
Nathan B. Van Etten

CARCINOMA OF THE UTERINE CERVIX 481
George Van S. Smith and *Frank A. Pemberton*

ESOPHAGOBRONCHIAL FISTULA: A RESULT OF A FOREIGN BODY 494
John A. Murtagh and *M. Dawson Tyson*

MEDICAL PROGRESS: DERMATOLOGY 496
Perry C. Baird, Jr.

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL 504

EDITORIALS
"Old Men Plant Trees" 509
Home Canned Food 509

DEPARTMENTS
Medical Eponym 510
Massachusetts Medical Society 510
New Hampshire Medical Society 512
Miscellany 512
Correspondence 513
Notices 514
Book Reviews 516

Owned and Published by the Massachusetts Medical Society

Published weekly in Boston at 8 Fenway. Domestic, $6 per annum, 25c per copy; Canada, $7.04; Foreign, $8.52.
Entered as second-class matter, November 16, 1932, at the post office at Boston, Mass., under the Act of March 3, 1879.
Copyright, 1940, by the Massachusetts Medical Society.

NEW HAMPSHIRE MEDICAL SOCIETY

OFFICERS FOR 1939-1940

PRESIDENT: JAMES B. WOODMAN, Franklin. VICE-PRESIDENT: EZRA A. JONES, Manchester.

SECRETARY-TREASURER: CARLETON R. METCALF, Concord.

COUNCILORS: Henry H. Amsden, Timothy F. Rock, Herbert L. Taylor, John A. Hunter, Richard E. Wilder, Charles E. Smith, Clifton S. Abbott, Arthur W. Burnham, John J. Brosnahan, Emery M. Fitch.

TRUSTEES: Prederic P. Lord, 1940; Samuel T. Ladd, 1941; Henry O. Smith, 1942.

HOUSE OF DELEGATES: Speaker, Fred Fernald; Vice-Speaker, Robert O. Blood.

DELEGATE A. M. A.: Deering G. Smith.

ALTERNATE DELEGATE A. M. A.: Emery M. Fitch.

NECROLOGIST: Henry H. Amsden.

STANDING COMMITTEES

ADVISORY COMMITTEE ON JURISPRUDENCE: Clifton S. Abbott, Belknap County; Fred E. Clow, Carroll County; Osmon H. Hubbard, Cheshire County; Richard E. Wilder, Coos County; John F. Gile, Grafton County; David W. Parker, Hillsborough County; Robert J. Graves, Merrimack County; Herbert L. Taylor, Rockingham County; Louis W. Flanders, Strafford County; Henry C. Sanders, Jr., Sullivan County; Carleton R. Metcalf, Concord, Chairman.

AMENDMENTS TO CONSTITUTION AND BY-LAWS: Fred E. Clow, Louis W. Flanders, Philip McQuesten.

CONTROL OF CANCER: George C. Wilkins, Howard N. Kingsford, George F. Dwinell.

NEW ENGLAND MEDICAL COUNCIL: James B. Woodman, President; Carleton R. Metcalf, Secretary-Treasurer; Harry O. Chesley, 1940; Robert H. Brooks, 1941; David W. Parker, 1942.

TUBERCULOSIS: Robert B. Kerr, Robert M. Deming, John D. Spring.

MEDICAL ECONOMICS: Leslie K. Sycamore, 1940; Richard W. Robinson, 1941; Clarence E. Dunbar, 1942.

MEDICAL EDUCATION AND HOSPITALS: John P. Bowler, James W. Jameson, Herbert L. Taylor.

MENTAL AND SOCIAL HYGIENE: Charles H. Dolloff, Benjamin W. Baker, John B. McKenna.

PUBLIC RELATIONS: James B. Woodman, Ezra A. Jones, Carleton R. Metcalf, Robert J. Graves, John F. Holmes.

PUBLICATION: Carleton R. Metcalf, Warren H. Butterfield, Ellsworth M. Tracy.

SCIENTIFIC WORK: Carleton R. Metcalf, Frederick P. Scribner, Nathan T. Millikes.

SPECIAL COMMITTEES

ADVISORY COMMITTEE ON MEDICAL RELIEF: Robert J. Graves, John P. Bowler, Roland J. Joyce.

MATERNITY AND INFANCY: Robert O. Blood, Benjamin P. Burpee, Marion Pairfield.

CHILD HEALTH: Colin C. Stewart, Jr., Travis P. Burroughs, Franklin N. Rogers.

The next annual meeting will be held in Manchester, May 14 and 15, 1940.

VERMONT STATE MEDICAL SOCIETY

OFFICERS FOR 1939-1940

PRESIDENT: C. F. BALL, Rutland. PRESIDENT-ELECT: A. M. CRAM, Bridgewater. VICE-PRESIDENT: W. W. ANGELL, Randolph.

SECRETARY: B. F. COOK, Rutland. TREASURER: DAVID MARVIN, Essex Junction. AUDITOR: T. S. BROWN, Burlington.

COUNCILORS: First District: L. E. Sample, St. Albans; Second District: R. E. Seeley, Rutland; Third District: F. E. Farmer, St. Johnsbury; Fourth District: A. M. Cram, Bridgewater.

CANCER COMMITTEE: C. F. Ball, Rutland, Chairman (3 years); J. H. Woodruff, Barre (2 years); W. W. Angell, Randolph (1 year).

EXECUTIVE COMMITTEE: B. F. Cook, Rutland, Chairman; G. B. Smith, Rutland; R. E. Seeley, Rutland.

HEALTH AND PUBLIC INSTRUCTION COMMITTEE: P. D. Clark, Burlington, Chairman; C. G. Abell, Enosburg Falls; L. J. Wainer, Hinesburg.

LEGISLATIVE COMMITTEE: R. E. McSweeney, Brattleboro, Chairman; F. J. Hurley, Bennington; A. B. Soule, Jr., Burlington.

LIBRARY COMMITTEE: W. H. McBride, Island Pond, Chairman; Lyman Allen, Burlington; G. G. Marshall, Rutland.

MATERNAL AND CHILD HEALTH COMMITTEE: H. A. Durfee, Burlington, Chairman; Emily T. Wilson, St. Johnsbury; R. E. Corley, Burlington.

NECROLOGY COMMITTEE: C. F. Dalton, Burlington, Chairman; G. G. Marshall, Rutland.

PUBLICATIONS COMMITTEE: B. F. Cook, Rutland, Chairman; H. E. Upton, Burlington; C. F. Ball, Rutland.

PUBLIC RELATIONS COMMITTEE: F. E. Farmer, St. Johnsbury (3 years); Stewart Ross, Rutland (2 years); E. A. Hyatt, St. Albans (1 year).

DELEGATES

AMERICAN MEDICAL ASSOCIATION: B. F. Cook, Rutland.

ALTERNATE: C. G. Abell, Enosburg Falls.

MASSACHUSETTS: R. E. McSweeney, Brattleboro.

NEW YORK: C. H. Beecher, Burlington.

NEW HAMPSHIRE: A. M. Cram, Bridgewater.

MAINE: C. G. Schurman, Newport.

CONNECTICUT: F. E. Farmer, St. Johnsbury.

RHODE ISLAND: Philip Wheeler, Brattleboro.

OFFICERS OF THE HOUSE OF DELEGATES

PRESIDENT: E. D. McSweeney, Burlington. FIRST VICE-PRESIDENT: C. G. Schurman, Newport.

SECOND VICE-PRESIDENT: Paul C. T. Bacon, Springfield.

The New England
Journal of Medicine

Copyright, 1940, by the Massachusetts Medical Society

VOLUME 222 MARCH 21, 1940 NUMBER 12

MEDICAL EDUCATION

A. LAWRENCE LOWELL

BOSTON

HAVING been asked to write out for the *New England Journal of Medicine* some informal remarks which I made last June at the Harvard Medical School to the Class of 1914 on the twenty-fifth anniversary of its graduation, I send these pages. The excuse for the remarks was that "old men plant trees," which means that as they cannot expect to see the fruition of plans they propose, or ideas they suggest, they are free to dream about them. In this spirit I made the observations to the class, the substance of which I repeat here as well as I can.

Education in medicine is more difficult than that in any other profession, because it involves the knowledge of many subjects which, apart from their relation to medicine, have no natural connection. In a school of law or engineering, for example, the various topics studied are either different phases of the same general subject, or, like mathematics in engineering, a tool for the solution of its problems. In a medical curriculum, on the contrary, gross anatomy has to the beginner no obvious connection as a tool or otherwise with biological chemistry, bacteriology or pharmacology. Each involves a brute effort of memory without much help from educational mnemonics, and is largely forgotten before the time comes for its application to the practice of medicine or surgery. The student learns anatomy and forgets much of it, physiology and forgets much of it, and so on throughout his course.

I recall the remark of a professor in a special field, that he always described in a lecture to his class a very rare disease of which he felt that his students ought to have heard, although he knew they would remember nothing about it. Perhaps the result was merely confusion in the less perceptive members of the class, rather than a clearer conception of the general aspects of medicine. Whether there is an advantage in learning more facts than can be retained depends upon the nature of those facts and their effect upon the mind. When fresh illustrations of a thought or action tend to produce familiarity with the idea or process, and thus render it more easily and better reproduced, it is well. This is true of making a diagnosis or watching an operation: but it is not true of striving to memorize more discrete facts than the ordinary human mind can retain and utilize; and every physician knows that medical knowledge has far passed that point today. Therefore it should be more and more recognized as having done so, and selection of basic topics ought frankly to replace the attempt at omniscience. No doubt this has been done to a large extent; but the outside observer feels that it ought to be done with greater system.

No other professional education attempts to cover so large a part of its possible field of knowledge for its students; nor could it do so without obliging them to spend the better part of their lives in learning many specific things that they will never use. In former times the physician was expected to make a diagnosis on his first visit to the bedside, on peril of being thought ignorant if he failed to do so; but that has long passed, and in any complex case he takes blood and cultures, reserving his final opinion until these have been examined in the laboratory.

There is, in fact, a very real disadvantage in the present length of medical education, and that is the late age at which physicians and surgeons are able to begin active practice. The course at most first-class medical schools is now four years, followed by an average of about two years in a hospital, and longer with those most ambitious to perfect themselves. If a man goes through a college, he spends nearly two years of it in premedical studies, entering college at an average age of eighteen years and three months, thus graduating at twenty-two years and three months. That means that he gets through the medical school and

hospital not earlier than twenty-six — far older than a man ought to be when he begins his work in life, and in most cases too near the end of the age of greatest intellectual fertility.

At the other end of his career, if he has an appointment of service in a hospital he loses it, as a rule, at sixty-two; and very commonly his private practice therewith. Some years ago one of our clinical professors retired from the hospital at the regular age, and also from the medical school because he had lost his clinic. His former students and colleagues gave him a dinner which received much publicity, and produced the impression that he was bidding farewell to medicine: whereat he lost the private practice he had hoped to continue. A little later a colleague, on retiring, was offered a complimentary banquet, but prudently declined it. Perhaps the age of retirement is too early or too late — too early if it means withdrawing from the community the benefit of his experience; too late if it means turning over to his juniors the bulk of the work at the hospital, while retaining some supervision and a sufficient teaching clinic.

As things stand, the man with a permanent hospital appointment — out of a useful life which could last, let us say, on the average until seventy — has a maximum of some thirty-six years for acquiring and conducting a practice, to which he has devoted, including the two premedical years, a minimum of eight to professional training. That seems disproportionate; and, what is more, the length of training has been increasing, and the age of hospital retirement becoming lower, until the outside scoffer wonders how soon the time to leave will arrive before the preparation for appointment is complete.

It is curious to compare the position of the clinical with that of the laboratory teacher. The latter may be appointed to a position of some sort in the medical school at any period after graduation therefrom, if he shows ability, and may hold his place as late in life as the general policy of the university permits. More depends upon the progress and the value of the man, less upon dates and periods.

Now let us look at these facts, beginning with the college. In the last half-century the age of entering Harvard, and no doubt other colleges, has been reduced almost exactly one year: from nineteen and three months to eighteen and three months. Personally, I should like to see it fall six months more; for I think reasonably intelligent young men are perfectly capable of excellent intellectual development at that period of life. I should much regret to have the students of our best medical schools lose the benefit of contact with other young men in a college of liberal arts: the more so because I now lament the withdrawal, as compared with former times, of the medical profession from civic affairs to which they could contribute so much.

In regard to the next stage, that of the medical school, one who has had a chance to see it only from the faculty table must speak with great diffidence; and yet he may get some impressions not wholly without value because detached from the interest of teachers in their specific fields. That interest was in earlier days truly formidable. One sees it in the planning of the present Harvard Medical School, with its four separate and distinct establishments for the four chief laboratory subjects, each capable of containing an entire class, with its big lecture room unused three-quarters of the time. The impression is that those who planned the school intended to exclude from anatomy and from physiology, for example, any infiltration of the other as something alien to its nature. The old conception was the attainment of medical knowledge by study of many distinct and separate fields; that of the present, is correlating those fields into one great subject of medicine as a coherent whole; and to do this by an even more rapid process seems not impossible.

One sees the old conception again in the former attitude of the laboratory and clinical professors toward each other. They sat on opposite sides of the faculty table, and if an additional appointment were made to one group it was expected by the other also, that the balance might be maintained. It was like the days before the Civil War, when if a free state was admitted to the Union a slave state must come in to match it. Such an attitude in the medical school is inconceivable today. The clinic makes constant use of a laboratory, and the laboratory teacher appreciates more fully that his ultimate aim is fitting men for practice.

The interest of the medical teacher in his specific field as something distinct and separable from medicine as a whole has been greatly reduced: partly by a better recognition of the interrelation of all scientific knowledge which has broken down artificial distinctions; partly in the Harvard Medical School by the general examination for graduation which has caused both student and teacher to correlate laboratory and clinical knowledge in a striking way. It is strange that this highly effective device has been little copied in other medical schools, for people still regard examinations mainly as a test of work done, whereas their most

important function is setting a standard of accomplishment.

Notwithstanding the advances made, there does seem to be still some needless attempt to cover too much ground, and it is possible that by a better correlation of structure and function, of laboratory and clinic, some forgetfulness could be saved; and to forget means waste of time in medical education. Failure to remember much that has been learned is inevitable; but oblivion due to needless lack of foresight in the sequence of the subjects taught is clearly to be avoided in a school of medicine. It means the loss of time; and time — that is, the length of the period required for professional training — is a vital matter in medical education today.

For a non-professional observer to attempt to tell experts how to improve their methods would be presumptuous and provoke derision, but he may properly observe that the results are in some respects defective from the standpoint of the community and of the profession. He may point out defects and suggest that they take them into consideration.

Vast improvements in medical education have been made in the last half-century; but in making them there seems to have been a tendency to add the new to the old without sufficient effort to eliminate some things no longer needed, to consolidate and simplify the curriculum — including the hospital part thereof — to make it more consistent, easier to grasp as a whole. All honor, nevertheless, to the men who have brought it to the present state. In view of the enormous increase in medical knowledge they have done wonders, but they would be the last to claim, or to hold, that they had reached perfection; or, in the words of our own Oliver Wendell Holmes, that the time has come to expect that "Heaven declare its final dividend."

ALTERNATING TREMOR (PARALYSIS AGITANS) AND ATHETOSIS*

Recent Advances in Diagnosis and Treatment

TRACY J. PUTNAM, M.D.†

NEW YORK CITY

THERE is a natural tendency to suppose that obscure conditions the symptoms of which display some similarities are due to similar disease processes. Doubtless for this reason, it has been the custom to group together Parkinson's disease, postencephalitic tremor, Sydenham's chorea, cerebellar tremor, Huntington's chorea, athetosis, dystonia and other entities. Formerly even the tremor of Graves' disease was often included. From this group I shall attempt to pick out and reassemble two categories, which appear to be well defined physiologically, and which are ordinarily due to a limited number of disease processes. These two may be denominated as alternating tremor and athetosis.

ALTERNATING TREMOR

The most familiar example of alternating tremor is paralysis agitans of the elderly, which, as we all know, was described by James Parkinson[1] in 1817. His clinical description, easily available in reprinted form, has scarcely been equaled since. He noticed the persistence of tremor in certain groups of muscles, its rhythmic, alternating quality, the fact that it may disappear during voluntary activity (or rarely be exaggerated) and the rigidity and weakness which accompany it. The pathological basis of the disease is now recognized to be an arteriosclerotic atrophy of the globus pallidus and substantia nigra.[2] This is often associated with scattered lesions throughout the nervous system, which are doubtless responsible for the mild defects of the pyramidal system and consequent paresis of voluntary motion often found, and also for general cortical atrophy and intellectual enfeeblement, either of which may or may not coexist.

Since the pandemic of encephalitis of 1918 – 1925, juvenile forms of the same physiologic disturbance have become almost commoner than the senile form. At first, a history of encephalitis was usually obtainable from the former group of patients, but in the presenile cases in which the onset has taken place in recent years, such a history is the exception rather than the rule. There seems to be a tendency for the senile and presenile groups to merge, so that now the commonest decade for onset is the fifth.[3]

A similar syndrome is rarely seen following head

*Read at the annual meeting of the New Hampshire Medical Society, Manchester, June 7, 1939. From the Neurological Unit, Boston City Hospital, and the Department of Neurology, Harvard Medical School.

†Formerly, head of Neurological Department, Boston City Hospital; professor of neurology and neurosurgery, Columbia University College of Physicians and Surgeons; director of Services of Neurology and Neurosurgery, Neurological Institute, New York City.

injuries in young people, more rarely still as a result of multiple sclerosis, chorea and a scatter of other etiologic entities.

Clinical Manifestations

The diagnosis is unmistakable in typical cases, which all physicians have seen. A few signs are to be watched for in doubtful cases. To be included in this category the tremor must affect chiefly the distal portion of the affected extremities, and have a regular rate of 5 to 8 per second, varying scarcely at all from day to day or from limb to limb.

Early signs are a loss of the normal swinging of the arms in walking, immobility of the face and eyes, failure to move the feet under the center of gravity in rising from a chair and inability to cross the legs in sitting. If the patient is asked to wink rapidly, the eyelids tend to lag after one or two closures. If the forehead is tapped with a hammer, the eyelids tend to go into spasm. As the patient attempts to touch his forefinger with his thumb repeatedly and rapidly, the two digits seem to "freeze" together. In contrast to this disability, the patient easily catches a ball or a roll of paper which is thrown to him, tosses it back and again becomes immobile.[4]

Special Physiological Studies

With special recording devices, the best of which is the electromyograph, the following additional points may be made out: as the flexors contract, the extensors relax completely, and vice versa. The bursts of contraction appear simultaneously in many of the motor units (groups of muscle fibers innervated by a single anterior horn cell). This is unlike normal voluntary movement, which is sustained by a series of overlapping asynchronous discharges of motor units. Rigidity when present is produced by a simultaneous innervation of protagonist and antagonist muscles.[5]

Medical Treatment

None of the ordinary disease processes underlying the syndrome just described are susceptible of successful treatment. At present, our only resource is to attack the physiologic disturbance rather than its cause. The same types of remedy are therefore applicable to all the clinical varieties of alternating tremor, but the amount of success that they promise is inversely proportional to the extent of the lesions and to the patient's age.

The standard treatment of paralysis agitans of all types is the use of drugs of the hyoscin series (Charcot,[6] 1867). They should always be tried, though the results are often disappointing. Convenient forms are the 2½-gr. pills of stramonium leaves or the ordinary 1/100-gr. hyoscin tablets. Either may be used three times a day, and rather rapidly pushed until the patient develops toxic symptoms. Recently a "wine of Bulgarian belladonna" (not yet on the market) has been given extensive trial; it is of questionable advantage over older forms, but may be tried if they fail. The dose is 5 drops after each meal, increased by 5 drops a day to the point of tolerance.[7] The capacity of patients with paralysis agitans for drugs of this series is sometimes enormous; one of my patients took 1/3 gr. of hyoscin daily over several days. The unpleasant symptoms may often be mitigated by giving pilocarpine, 1/8 gr. three times a day by mouth.

The effect of drugs of the atropine series is sometimes increased by the use of amphetamine (Benzedrine sulfate) by mouth, in doses of 10 mg. or more. This is particularly effective against the tics, such as oculogyric crises, that often complicate the postencephalitic type of the syndrome. Patients also tend to feel stronger and more alert when taking amphetamine. It is seldom effective in the senile group.[8]

Other drugs are on trial. Certain modifications of atropin and synthetics have been recommended.[9] In the experience of our clinic, they are seldom more effective than the official drugs. Curare has been injected with promising results, but is too cumbersome and dangerous for routine use at present. Alcohol in the form of ordinary liquors is a great relief to some patients, and the barbiturates (except phenobarbital[10]) are worth trying.

Exercises and psychotherapy have been recommended, but are seldom of decisive value.

Surgical Treatment

In some cases of alternating tremor, of whatever origin, the situation is sufficiently distressing to warrant surgical intervention. Success has been reported from operations of two general types: resection of the motor[11] or premotor[12] cortex, and section of the pyramidal tract.[13] As regards the tremor, the result is often striking: it is abolished or reduced to an insignificant remnant. The more extensive cortical operations produce a severe monoplegia, however. It is still uncertain whether favorable results can be obtained by removal of more restricted areas, with less disability. Section of the lateral pyramidal tract in the cord is followed by less disturbance in the use of the hand, but the leg is also rendered somewhat spastic — a desirable alternative to tremor, but a loss if it was formerly unaffected. Whether any of these operations can be used in bilateral cases is open to question, and of course the patient's age and general condition must be carefully considered. The

whole subject is a new one, and the indications for operation will doubtless grow clearer in the next few years.

My own operative experience includes 3 cases in which a complete section of the lateral pyramidal tract was performed on one side, 3 in which a partial section was done and 1 in which a cortical operation was carried out. There were no operative deaths. All patients were improved, moderately or greatly.

Athetosis

Under this term may be included at least many examples of the syndromes of spasmodic torticollis, dystonia musculorum deformans, hemiballism and posthemiplegic chorea. The etiology of most of these conditions is obscure. In many cases there is a history of birth injury or asphyxia. Occasionally they are familial. It is somewhat unusual to be able to trace the disturbance to a vascular accident or injury.

Irrespective of its origin, the disease process affects the basal nuclei, predominantly the caudate. The changes, which may be slight, are usually demonstrable by encephalography.

Physiology

Irrespective of etiology, the diseases included under the term "athetosis" have in common a persistent, irregular involuntary spasm of the muscles involved. Protagonists and antagonists are simultaneously affected, so that the excursions are usually slow, and attended with a considerable output of energy. As a result, the patient perspires, his metabolism rises and the muscles hypertrophy (which seldom occurs in paralysis agitans). While there is seldom a definite pattern or rhythm to the involuntary motions, they are often restricted to one part of the body — the face, tongue, neck, one or both arms, one side or the entire body. The leg is rarely affected alone. The grotesque postures and gestures which the unfortunate victims make often cause them to be regarded quite unjustly as feeble-minded. The movements are more severe when the patient attempts voluntary movement, and also when he is embarrassed or knows that he is being observed — a circumstance which has led to the erroneous opinion that the whole syndrome is of psychogenic origin.

Athetosis of one or more extremities — or even of the entire body — may be accompanied by complete or almost complete voluntary paralysis. In this event, signs of pyramidal tract defect are demonstrable. An alternating tremor may also coexist.[14]

Electromyography shows that the motor units discharge in a normal polyrhythmic fashion, which doubtless accounts for the rather remarkable rarity of fatigue. What is abnormal is the fact that there is no relaxation of antagonists, and that the movements are involuntary.[15]

Medical Treatment

The method of treatment most commonly used is re-education of the affected muscles. The patient is encouraged to take corrective exercises, and practices certain skills under supervision. He is urged to appreciate the sensation of relaxation of muscles and voluntary innervation of movements.[16]

This method has been reported[16, 17] to yield excellent results in certain cases, although from the published accounts it is often difficult to be sure how much of the improvement was in the associated hemiplegic disturbances. In the cases I have seen and followed, the method has produced relatively little in the way of favorable results. There is, of course, no harm in trying it, but in every case the progress should be carefully followed by means of motion-picture records.

Treatment by drugs has in the past been wholly unsuccessful. There seems to be some hope that the use of curare or drugs of similar action may be beneficial,[18] but many difficulties and dangers must be overcome before they can find wide acceptance.

Surgical Treatment

Innumerable orthopedic operations (tendon lengthenings, transplantations, nerve sections) have been employed in the treatment of athetosis, usually without success. Posterior root section is of no value.

The first successful surgical treatment was that applied by Horsley[19] in 1909. He resected the corresponding motor cortex, with relief of the abnormal movements, but a cortical monoplegia resulted. This operation has been used intermittently, and has recently been revived by Bucy and his collaborators,[20, 21] Sachs[22] and Klemme.[12] The reported results are good, but Bucy, who has given the matter particular study, recommends it only for cases in which one arm alone is chiefly involved, and the extremity is already useless.

The operation of section of extrapyramidal tracts in the anterior column of the spinal cord, for athetosis, was introduced at the Neurological Unit in 1931.[23] To date, 50 operations have been performed, in 38 cases. There have been 4 operative deaths, of which only 1 (from pneumonia, two weeks after operation) occurred in the last 25 cases. The proportion of improvement is difficult to estimate; 5 patients have been enabled to seek employment, and most of the remainder are well

pleased with the result of the operation, even when the advance consists in no more than being able to lie quietly in bed or sit up in a chair, if this has previously been impossible. In no case has there been complete relief, but the improvement which is secured by the end of convalescence is permanent, unless the progress of the disease destroys other parts of the brain.[14, 23]

Favorable results with this type of operation have also been reported by Oldberg[24] and by Machansky.[25]

Summary

A review of the various subvarieties of alternating tremor (paralysis agitans) and of athetosis (torticollis, dystonia, hemiballism) is presented, including a brief physiological analysis of their manifestations. The methods of treatment of both diseases by drugs, new and old, by retraining and by the various types of operation recently introduced are described, and an attempt is made to evaluate the indications for each and the results to be expected.

706 W. 168th Street.

References

1. Parkinson, J.: Essay on the shaking palsy. *M. Classics* **2**:964-997, 1938.
2. Hassler, R.: Zur Pathologie der Paralysis agitans und des postenzephalitischen Parkinsonismus. *J. f. Psychol. u. Neurol.* **48**:387-476, 1938.
Neustaedter, M., and Liber, A. F.: Concerning the pathology of parkinsonism (idiopathic, arteriosclerotic and post-encephalitic), with report of 15 necropsies. *J. Nerv. & Ment. Dis.* **86**:264-283, 1937.
3. Patrick, H. T., and Levy, D. M.: Parkinson's disease: a clinical study of 146 cases. *Arch. Neurol. & Psychiat.* **7**:711-720, 1922.
4. Wilson, S. A. K.: The old motor system and the new. *Modern Problems in Neurology*. Chap. 6. 364 pp. London: E. Arnold & Co., 1928.
5. Hoefer, P. F. A., and Putnam, T. J.: Action potentials of muscles in rigidity and tremor. *Arch. Neurol. & Psychiat.*: in press.
6. Charcot, J.: cited by Ordenstein, L.: Sur la paralysie agitant et la sclérose en plaques généralsée. 84 pp. Paris Theses, 1867. P. 31.
7. Alcock, N. S., and Carmichael, E. A.: Investigation into treatment of parkinsonism with Bulgarian belladonna. *Quart. J. Med.* **7**:565-574, 1938.
8. Solomon, P.; Mitchell, R. S., and Prinzmetal, M.: Use of benzedrine sulfate in postencephalitic Parkinson's disease. *J. A. M. A.* **108**:1765-1770, 1937.
9. West, R.: Intravenous curarine in the treatment of tetanus. *Lancet* **1**:12-16, 1936. The pharmacology and therapeutics of curare and its constituents. *Proc. Roy. Soc. Med.* **28**:565-578, 1935.
10. Ziskind, E., and Ziskind, E. S.: Phenobarbital contraindicated in parkinsonism. *J. A. M. A.* **109**:20-23, 1937.
11. Bucy, P. C., and Case, T. J.: Tremor: physiologic mechanism and abolition by surgical means. *Arch. Neurol. & Psychiat.* **41**:721-746, 1939.
12. Klemme, R.: personal communication.
13. Putnam, T. J.: Relief from unilateral paralysis agitans by section of the pyramidal tract. *Arch. Neurol. & Psychiat.* **40**:1049, 1938.
14. *Idem:* Results of treatment of athetosis by section of extrapyramidal tracts in the spinal cord. *Arch. Neurol. & Psychiat.* **39**:258-275, 1938.
15. Hoefer, P. F. A., and Putnam, T. J.: Action potentials of muscles in athetosis. *Arch. Neurol. & Psychiat.* (in press).
16. Phelps, W. M.: The care and treatment of cerebral palsies. *J. A. M. A.* **111**:1-6, 1938.
17. Carlson, E. R.: Infantile cerebral palsy: its treatment by selective inhibition of sensory stimuli. *Ann. Int. Med.* **11**:324-334, 1937.
18. Burman, M. S.: The therapeutic use of curare and erythroidine hydrochloride for spastic and dystonic states. *Arch. Neurol. & Psychiat.* **41**:307-327, 1939.
19. Horsley, V.: The function of the so-called motor area of the brain. *Brit. M. J.* **2**:125-132, 1909.
20. Bucy, P. C., and Buchanan, D. N.: Athetosis. *Brain* **55**:479-492, 1932.
21. Bucy, P. C., and Case, T. J.: Athetosis. II. Surgical treatment of unilateral athetosis. *Arch. Neurol. & Psychiat.* **37**:983-1020, 1937.
22. Sachs, E.: The subpial resection of the cortex in the treatment of Jacksonian epilepsy (Horsley operation), with observations on areas 4 and 6. *Brain* **58**:492-503, 1935.
23. Putnam, T. J.: Treatment of athetosis and dystonia by section of extrapyramidal motor tracts. *Arch. Neurol. & Psychiat.* **29**:504-521, 1933.
24. Oldberg, E.: discussion of Putnam.[14]
25. Machansky, F.: Surgery of conduction paths and roots of spinal cord in severe forms of athetosis. *Sovet. khir.* **10**:672, 1936.

THE QUALITY OF MEDICINE*

Nathan B. Van Etten, M.D.†

New York City

WHAT kind of medicine do you want? Do you want England's medicine, or Hitler's medicine, or Stalin's medicine, or New Zealand's medicine, or American medicine?

Do you want socialized medicine, or state medicine, or democratic medicine? Do you want impersonal medical care or do you want free choice? Do you want bureau medicine, or medicine fostered and promoted by those who have been especially dedicated to the service of the sick? Do you want the doctor an employee of the state working limited hours for a salary?

Shall we be dominated by dictators or by the needs of the people? The future of medicine will be determined by our citizens. If they are ignorant, the practice of medicine will suffer; if they are informed, American medicine may go forward. Medicine has survived the rise and fall of many civilizations. I predict that its advances can be delayed only temporarily, and that they will attain greater heights long after the actors of the present generation have left the stage.

An inspired propagandist says that there are forty million people in the United States who are suffering from the lack of medical care because their incomes are less than eight hundred dollars, with the consequence that they are unable to maintain adequate standards of living. The remedy he prescribes is socialized medicine after the European manner. He views American evolution as immature because we hesitate to embrace social systems which seem to have failed in Europe, and to be poor substitutes for developing programs which have brought medical care in America to higher accomplishments than anywhere else.

The propagandist admits American superiority, which he credits to a higher standard of living. When he contrasts small countries, whose populations are homogeneous, to polyglot America, he

*An address delivered at the annual meeting of the Vermont State Medical Society, Burlington, October 5, 1939.

†President-elect, American Medical Association.

pays us a real tribute. The difficulty of matching Denmark in the eradication of syphilis is obvious, but American medicine is enlisted in the fight for that objective.

He says with finality that there is no further need for surveys to uncover the lack of medical care of the unfortunate forty millions — that we now know all there is to know about these neglected people. On the contrary, I believe that there is more need than ever to discover the extent of human suffering among those who are existing miserably and the extent to which medical care fails to reach them.

Every city in the United States has thousands of people who are handicapped by bad housing. Senator Wagner is quoted as saying that there are over four hundred thousand people in the City of New York who live in buildings unfit for human habitation. I can very well believe that story when I am told that there are two hundred and fifty thousand bedrooms in New York City which have no windows. Many of these rooms have multiple occupancy, and all are potentially pestilential. The government-administered City of Washington is said to lead all our cities in slum miseries, as also it leads in the statistics of morbidity. Every one of these city dwellers must be included in the forty million, but none of them can claim to be outside the areas of free hospital and medical care. Every citizen of the City of New York may have emergency medical care free of cost at any moment of the day or night if he asks for it. We can well believe that it is seldom asked for when the need is not acute through accidental or tragic illness.

Many small towns have hospital facilities available to people whose incomes are eight hundred dollars or less, or who have no income at all, and where a generous medical profession cares for them free or at charges within their means. Many farmers fail to see eight hundred dollars in any year, and still are able to pay for medical care.

No one can deny that there are communities which are poorly supplied with medical care as well as poorly fed and clothed and housed. No one can deny that eleven million people are unemployed. No one can deny that there are still a few sections of this country where the birth rate is still out of proportion to the supply of food or education.

No one can deny that there are local needs for hospital beds — while at the same time 20 per cent of all hospital beds are unoccupied. It is, however, not a survey but a distortion that tries to show that forty million people are failing to receive medical care, while at the same time death rates are steadily falling. In New York City the statistics for 1939 are all showing new low records. This is an accomplishment of American medicine. Americans are so hospital-conscious that sixteen people enter a hospital every minute day and night. A baby is born every fourteen seconds, and half these births occur in hospitals.

The fact that 47 per cent of all our hospital beds are occupied by insane people cannot be charged entirely to the failures of medical care, while much of it must be credited to social maladjustments. Surveys are needed more than ever. The Medical Society of the State of New Jersey has just finished a survey which might well serve as a model to reveal the true conditions in every state. It did not make estimates from occasional samplings of the population, but reported every county and every township. This is not too difficult a task and must be done to discover all the facts of supply and distribution and need of medical care.

Every physician in the United States must be enlisted in the search for the truth on which to build the foundations for a master plan. The improvement of living conditions is preventive medicine. It is both a national and a local problem. The New York situation probably involves greater difficulty and cost than are encountered in other cities, but it can be cured by New York money and New York effort. It might be well if the national government would show the world how to do it by staging a demonstration in the District of Columbia. I believe that every physician in the land should get behind slum clearance and demand action from all local and national authorities.

The propagandist proposes to cure all our health deficiencies by imposing upon the American people some of the European systems of sickness insurance. Sickness insurance abroad has not reduced morbidity or mortality, or the loss of time of the worker due to sickness. Foreign sickness insurance does not take care of the indigent. The indigent person is outside the field of insurance and is the problem of the taxpayer.

We must remember our own troubles with compulsory workmen's compensation insurance. Although this procedure has been greatly improved, we must not forget the scandals which accompanied it and which still require constant vigilance.

Although the propagandist admits that health insurance is not a panacea, he thinks that while it is not the ideal system, under the present social and economic conditions of the country compulsory health insurance, combined with extension of public-health services, is the best possible solution. The propagandist wobbles again when he advocates the Wagner Health Act and says that it neither carries nor advocates a health-insurance scheme. This bill

was introduced on February 28, 1939; on March 29, just a month later, as was expected, the senator's son, Robert F. Wagner, Jr., a member of the Assembly of the State of New York, introduced a compulsory health-insurance bill in contemplation of enactment of the federal measure. Cash benefits for disability and maternity care, he said, were included, because the federal bill makes provisions for aid to the states that provide such assistance. The Wagner Health Act opens the door to potential graft of vast dimensions.

Very few people budget their incomes for anything except rent, heat and light. Budgeting for sickness is now being inspired by hospital and medical service plans which involve small daily payments. These plans, now subscribed to by more than three million people, are helpful to many people and indirectly to physicians, but the experience of the past year has demonstrated such serious abuses of privilege by greedy subscribers that financial collapse is threatening, unless contracts are definitely limited and rigidly enforced. Surpluses melt away under excessive hospitalization, and the purposes of group service are defeated.

It seems inevitable that the insurance principle will be involved in plans for medical service, and it seems wise that many trials be made in the various states, such as are now proceeding in California and New Jersey. The medical profession has developed the high quality of medical care that we now enjoy, and earnestly desires to make it still better.

The propagandist asks whether the quality of medical care is really good in rural districts, where, he says, many doctors still practice horse-and-buggy medicine. I should answer that query by saying that the country doctor has given a very good account of himself, and that the quality of care given to people of small or moderate means in rural districts is often of the highest type.

The general practitioner is the backbone of medicine. In my opinion he would be ruined if he were subsidized. He does the best he can for each of his patients because that is the only way he knows to hold his practice, and he has an honest desire to restore his patients to functional usefulness. By and large the general practitioner is God-fearing — keeps the Decalogue and cherishes his sworn obligations. I should like him to take a more serious interest in local political machinery, and to use his great influence in the betterment of the public health through the practice of preventive medicine. I should like him to realize how great is his potentiality in stimulating his patients and all their contacts in the guidance and information of legislators who seldom understand the physician's viewpoint.

Every physician should have a copy of the proposed Wagner Act and should be shown the danger to himself of its provisions. Every physician should in turn advise all his patients and acquaintances of this danger, at once, and should ask them to bring pressure to bear on their legislative representatives, state and national, to defeat this legislation.

Although this measure was not acted on at the last session of Congress, it will appear at the next in amended form with an emotional appeal for the spending of millions for the promotion of public welfare — just another act in an orgy of spending for prosperity, and of handing over the practice of medicine to bureaus in Washington. Everyone should know that the estimated overhead expense of these bureaus in the administration of this act will be six million dollars. Sending a dollar to Washington does not make it bigger. I am convinced that this state will be better off by keeping its money at home — by developing the strength of its own department of health and by supporting its physicians in the practice of better medicine for all the citizens.

You must not take a negative position. Through the influence of systematized adverse propaganda, an impression has been created that the medical profession, and especially the American Medical Association, is against all progress, against any change in delivering medical care, and is acting in restraint of those who would try new plans. People should be told that these statements are untrue and unfairly presented, and should be told what American medicine really stands for.

Over a hundred years ago, in 1835, the vital statistics of Philadelphia revealed that the average expectation of life was twenty-one years. Preventive medicine, carried on by doctors, mostly private practitioners, in the United States, has raised life expectancy to above sixty years. This has been accomplished largely through the salvage of children who otherwise would have died from the ravages of communicable diseases.

One hundred and fourteen thousand of the one hundred and twenty-five thousand actively practicing physicians of the United States are members of the American Medical Association. This is organized medicine. Organized medicine stands for the protection of children from all communicable diseases by scientific methods and for the care and improvement of deformed or crippled children; for the protection of children from accident and injury, from blindness, from the exhaustion of child labor and from tuberculosis. It stands for nutritional improvement. Organized medicine,

through private practitioners and hospital practitioners, has been steadily improving the growth and health of children for many years.

Organized medicine is intensely interested in race improvement and in the science of immunology. It gets very little help from legislators for the promotion of compulsory vaccination against smallpox. Thousands of children evade vaccination. Thousands of cases of smallpox, all preventable, prevail at all times in this worst-vaccinated of all civilized countries. One case appeared in New York City last month and 14,335 were reported last year in the United States.

Organized medicine is constantly studying the problem of maternal mortality, and recent statistics show substantial gains in a nation-wide effort to salvage future mothers. It stands for prevention of communicable venereal diseases, for public health, for sanitation, for good education, for good food and drug laws, for good housing. It stands for better education of physicians, in order to implement them for the practice of better medicine.

It stands for having all the hospital beds that are needed, placed where they are needed. It is for all the state medicine that is needed for the care of the insane, the feeble-minded, the tuberculous and the indigent. It is for every effort that can be made by public-health services for the eradication of syphilis. It is for preventive medicine of all kinds. It is for co-ordination of all national health services, except those of the Army and Navy, into a national health department headed by a secretary of health.

It is against compulsory sickness insurance, and against the administration of medical practice by national bureaus. It is for the preservation of the practice of medicine by the family physician, so far as possible.

The old family doctor has nearly finished his career. He has carried the tradition of true philanthropy into every personal relation. His devotion to his self-imposed obligations has kept him out of the public notice. He quietly answers the call of the sick without self-consciousness or self-pity. He carries on unnoticed, unless like Doctor Dafoe he officiates at a quintuplet delivery or performs some dramatic service which is heralded in headlines. His skill is unknown beyond the immediate circle of his limited acquaintance. He never advertises. He holds no public office. He cannot leave his patients long enough to go to the legislature. His place is at home, trying to keep people well or curing the sick. His influence on public affairs is small because he is too busy to become an active partisan. He does not make much of an income because he is generously appreciative of the financial difficulties of his patients. He is no longer a saddle-bag doctor dispensing empiricisms. He no longer drives a characteristic gig. His high hat and his gold-headed cane are no longer symbolic. He has been well educated in the medicine of his period. His preceptorial training in the use of his powers of observation, in deduction and in the high development of his own senses, often more than five of them, has yielded to the deeper searching into the mysteries of bacteriology and of internal secretions. He has learned the value of mechanical helps. Unless he has been practicing longer than fifty years he is not an old doctor at all. Within fifty years he has become a modern doctor, because modern medicine is all measured within this last half-century. The metamorphosis of the old family doctor has been so gradual that he has passed on to this new doctor the age-old interest in the poor and afflicted. Although the new doctor raised his right hand and promised to keep sacredly the Hippocratic oath, he only subconsciously knows the text of his affirmation. The spirit of Hippocrates, of Luke the beloved physician, of Harvey, of Jenner, of Lister, of Osler and of Welch, has become the motivation of the Dafoes and thousands like him who never see their names in print.

The self-imposed two-thousand-year-old Hippocratic code has become the very fiber of the new doctor's impulse to carry on in high fidelity his consecration to the service of the sick. His cultural and technical training covered almost thirty years of his life. At twenty-seven he received his diploma, and thereafter served one or two years as an intern before starting to exercise his licensed right to practice medicine.

In the mad nineteen-twenties the fashionable specialties lured many young doctors into those lucrative fields. In the depressive cycle of the nineteen-thirties the family doctor has been much less embarrassed than the limited specialist, whose practice in many instances disappeared because patients could no longer pay his fees. In this period the family doctor has complained very little, and has cared for his patients regardless of fee, in many cases living on goods given in barter, even in large cities. He and his family have shared hard times before and will do so again. In some regions he refused government aid, while in other regions he now regrets that he has accepted government employment at low or never-paid fees. In large cities his position is more difficult than in small towns or rural regions. The city hospitals are crowded, not only with the normally indigent but also with people who formerly were able to pay for medical care. The doctor works in the hospitals and clinics and often meets his former patients there. He is the only person in the city hospital who works

without pay. Because he has always done so is not a good reason for his continuing to do so.

He works in the hospital for the pay of experience, for the pay of prestige, for the pay of promotion to places of prominence where he may receive the pay of larger responsibilities. He works to learn more about medicine in order to be qualified to learn more about medicine. He is retired for age at sixty-five while he is still a student, and he cannot be made to regret it. The doctor is the servant of the sick, and when he serves the really poor he considers it a priestly privilege. People who are unable or unwilling to pay for medical care crowd free dispensaries to the doors. They are mostly uninterested in the personality of any doctor: their chief interest is in getting something for nothing, and they submit to mass medicine because they must. One hundred and twenty patients in a medical clinic being served by four doctors in two hours means an average of four minutes for each interview, and is very poor medicine. During the same time the same waiting-space holds many other people waiting for other clinics, every one of which is crowded beyond comfortable limits. The clinic nurses and clerks work all day at high speed and are paid for their work. Doctors come and go for two hours or longer, giving their services absolutely free. Some of them are specialists, but most are general practitioners. Although many people are in need of medical service at low fees, and the cost to the city is small because the doctor is unpaid, many doctors would be glad to treat these patients in their own offices for nominal charges, and to give them better care than the hospital, because it would be individualized and unhurried. It would seem to be only fair that doctors as well as other people who work in tax-supported hospitals, or other government institutions, should be paid for their work. At present there is no money to pay them with. Doctors of various kinds who now work for the government receive salaries so small that in ordinary times their positions are unattractive. The government being unable to balance its budget, the prospect of seeing the doctor paid by the state is remote. The family doctor is aware that his status is changing, and desires to be one of the controlling factors in any new program. He justly resents the imposing on him of any compulsory program by nonmedical organizations. He believes that the American Bar would resent the imposition upon it of a program to regulate the practice of the family lawyer in much the same spirit.

The family doctor realizes the value of discussion of every phase of medical service, and is greatly interested in various plans now being put into experimental operation by county medical societies. He believes that the care of the sick is a medico-sociologic problem, and that all doctors should be organized to attempt a solution. He believes that the old types of individualism will be limited to unhurried study in limited fields involving investigative science.

He disbelieves in the practicability of extending the fields of state medicine, because the burdens of the state already excessively overload the taxpayer. He sees state education in difficulty because it has grown too expensive for the community pocket. He sees thousands of teachers unpaid and out of work, teacher training schools closed, few new teachers appointed; he draws an analogy between state education and state medicine, and believes that a similarly planned system of state-operated medical service would be an insufferable load, no matter how honestly it might be attempted. He believes that in any such system expensive bureaucracy would be inevitable, so that the doctor would become a poorly paid servant, his ambition to pursue scientific study would be dulled and general medical service would sink to degraded levels. Such a system cannot escape political manipulation. The legislature which votes the money for it will demand its administration by political officers. It is claimed that public opinion will guide these officers toward wisdom and honesty, but we cannot escape historical precedents which have always shown undue official absorption of the taxpayers' contribution to any public operation. State medicine as we now have it is not attractive to the family doctor; he sees a few brilliant career men who have fought their way to the top, but he believes that most of the rank and file of the lower grades have been lured into the service by the prospect of soup-bone security. The family doctor thinks of state medicine only in terms of relief from financial worries. When the doctor is making a living he forgets it, and turns again to the absorbing interest of giving the best that is in him to his patient; he feels that the government doctors' viewpoint is colored by a salary, and that from their safe vantage point they have lost an understanding of intimate medical problems.

The family doctor is acutely aware that the application of medicine lags behind the science of medicine; he laments the uneven distribution of medical service, even as he is saddened by the tales of inadequate housing and clothing and feeding of some people. The family doctor is in no sense a parasite living well upon the community; he is always willing to share common privation. The profit motive is not large in the doctor's life, but

the incentive to make a living is ever present. Paid research workers represent a very small portion of the medical profession, and the fact that they have not been demoralized by their salaries, often pitifully small, is not an impressive argument for subsidizing the whole medical profession.

The presence of too many doctors, preventive medicine and declining mortality and morbidity, as shown by current statistics, cannot be denied as economic factors. Few doctors have acquired wealth from the practice of medicine. Thirty per cent of them are said to be failing to make their expenses. In the light of such a statement the value of the doctors' contribution to the health of the nation is amazing.

The old family doctor of blessed memory is leaving the scene, but his successors are growing in effectiveness, and in the interest of the health of the nation deserve the unqualified support of all Americans.

I believe that our people would be responsive to an American health program if the physicians of the country could be inspired to write it. I believe that it should demand the consolidation of all national health bureaus into a national department of health headed by a cabinet officer. I believe that it should strongly preserve the quality of medical care — competently distributed. I believe that the units of health administration should be the states and their political subdivisions, where local health needs are known. And I believe that the general practitioner should be supported in his relation to the American family.

303 Tremont Avenue.

CARCINOMA OF THE UTERINE CERVIX*

The Results of Treatment Through 1933, Showing the Value of Supplementary X-Radiation

GEORGE VAN S. SMITH, M.D.† AND FRANK A. PEMBERTON, M.D.‡

BROOKLINE, MASSACHUSETTS

EXPERIENCES with carcinoma of the uterine cervix at the Free Hospital for Women have been briefly recorded through 1928.[1, 2] The purpose of the present survey, which takes the place of those now obsolete reports, is to revise the figures for results in the light of longer and much more complete follow-up, to embrace in the evaluation those cases seen through 1933, to trace the development of this clinic's treatment and to discuss various pertinent aspects as they arise in the course of compilation.

From May 1, 1876, to January 1, 1934, 997 consecutive patients recorded as having cancer of the cervix were seen or treated. For the purposes of this report it seems proper to omit from detailed consideration 69 of this number who had had their primary treatment elsewhere and were only secondarily seen, treated or given terminal care here.§

In preparing the material for the previous reports, the authors accepted the clinical diagnoses of cases from which tissue had not been removed for pathological examination. When patients with only a clinical diagnosis of cervical cancer fail to survive, one tends to assume that the diagnosis was correct because this is the commonest pelvic cancer in women. When, however, some of these patients are cured, the results are of debatable value for statistics without pathological confirmation. In order to avoid the inclusion of these few valueless cases among authentic survivors, and since the diagnoses of those who die remain presumptive (as so well demonstrated by the death certificates of patients who have died away from their place of original diagnosis‖), 100 cases without pathological diagnosis (75 before and 25 after October 1, 1902) will be evaluated separately.

For the previous papers the authors accepted the pathological reports as given, without attempting to review the sections. This raises the question as to how much reliance may be placed upon pathological diagnoses when the microscopic material is no longer extant. We have now taken the stand that a report is not valid unless accompanied by the section or an adequate description of the microscopic picture, for it could be argued that the report may have been erroneous, and in general the earlier reports lacked satisfactory descriptions. The 48 cases (33 before and 15 after October 1, 1902) with pathological diagnoses unsubstantiated by section or description will be

*Presented at the annual meeting of the New England Surgical Society, Salem, Massachusetts, September 29, 1939. From the Free Hospital for Women, Brookline, Massachusetts.

†Assistant professor of gynecology, Harvard Medical School; visiting surgeon, Free Hospital for Women; director, Fearing Research Laboratory, Free Hospital for Women.

‡Clinical professor of gynecology, Harvard Medical School; chief surgeon, Free Hospital for Women; consulting gynecologist, New England Deaconess Hospital, Boston.

§Of the 28 patients of the latter group receiving no further treatment in this hospital, 2 were alive thirteen years after primary therapy by radium elsewhere, the remainder dying before five years. Forty-one received secondary treatment, of whom 34 failed to survive five years, 1 died of recurrence seven years after first therapy and 6 were well on last follow-up, five, seven, seven, seven, ten and thirteen years, respectively, after first treatment.

‖The death certificates of 394 patients covered in this study have been consulted: cancer was not mentioned in 24, the alleged causes of death in these being cerebral hemorrhage, apoplexy, myocarditis, pneumonia, shock and kidney trouble, "natural causes, probably heart disease," chronic Bright's disease, diabetes, septicemia, phthisis, intestinal obstruction, fistula, proctitis with stricture and "no cause given." Carcinoma of the cervix was given specifically on 78 certificates; on 27, cancer was mentioned without specification of origin or location. Cancer of the uterus or synonyms were found on 209, and on 15 more, cancer of uterus, bladder and rectum, of uterus and bladder, of uterus and rectum, of uterus and ovary or of uterus and intestines or sarcoma of uterus were found. The remaining 41 certificates contained the following diagnoses: cancer of breast, lung, liver, stomach, intestines, sigmoid, rectum, bladder, pelvic organs, hip, intestines and stomach, vagina and bladder, pelvis and abdomen, growth of undetermined nature in abdomen, malignant disease of pelvis and "natural causes, probably cancer."

considered briefly with the 100 cases from which no tissue had been removed for biopsy.

For this writing all available sections have been re-examined critically and the microscopic diagnoses made anew, yielding indisputable pathological confirmation in the remaining 780 cases. Not included is any case that had so-called "preinvasive" cancer or concerning whose microscopic diagnosis there has been any difference of opinion among the pathologists to whom sections have been submitted. In 15 cases the tumor appeared to be primarily adenomatous with varying degrees of squamous metaplasia; in 2 cases, adenocarcinoma and squamous-cell carcinoma seemed to be present as distinct entities. The great majority of the sections of the remaining cases showed squamous-cell carcinoma; 7 per cent showed adenocarcinoma. Of the five-year survivors among the 780 patients comprising the body of this series (Tables 1 to 5), 7.3 per cent had had adenocarcinoma. Of all those with squamous carcinoma, 28.1 per cent were alive at five years, and of all those with adenocarcinoma, 29.6 per cent were alive after the same interval. It would seem from these figures, which may be entirely the result of coincidence, that the microscopic form of cervical cancer has no significant bearing on the outcome. In but 2 cases was a cervical polyp the apparent seat of the malignancy.

Review of Cases

First Seen or Treated at the Free Hospital for Women but Diagnosis Not Now Confirmable — 148 Cases

From May 1, 1876, to October 1, 1902 — 108 Cases. Of the patients seen before October 1, 1902, 18 received no treatment beyond terminal care; the remainder underwent some operative procedure, with a mortality of 9 per cent. The 5 alive at five years — 5 per cent of the total number seen and of the number operated on — were still living at thirteen, eighteen, twenty-one, thirty-nine and forty-nine years, respectively.

From October 1, 1902, to January 1, 1934 — 40 Cases. Of the 40 now unconfirmable cases seen after October 1, 1902, 12 were untreated. There was no operative mortality among the others. The 6 patients alive after the five-year interval — 15 per cent of the whole group and 21 per cent of those treated — were alive eight, nine, ten, fifteen, seventeen and seventeen years, respectively, after therapy. It was in order to avoid including these survivors among those who can now be proved to have had cervical cancer that this group of 40 cases was removed from the main series. This procedure will have no significant influence on important percentages, for only 9 of these cases fall into the 1923–1933 period.

First Seen or Treated at the Free Hospital for Women, October 1, 1902, through 1933, and Diagnosis Recently Confirmed Pathologically — 780 Cases

These cases fall conveniently into the following periods: October 1, 1902 to 1913, inclusive, 82 cases; 1914 to 1918, 79 cases; 1919 to 1923, 120 cases; 1924 to 1928, 225 cases; and 1929 to 1933, 274 cases. For the sake of clarity and comparison, each group will be considered separately. No vaginal hysterectomies have been performed for cancer of the cervix at this clinic since 1902. Hence "radical operation" in the charts includes complete and Wertheim hysterectomies and abdominal excisions of the cervical stump.

Table 1. *Summary of Treatment and Results, October 1, 1902 to 1913, Inclusive.*

Treatment	No. of Cases	Operative Deaths	Patients Untraceable at 5 Yr.	Patients Alive at 5 Yr.
Untreated	8	–	2	0
Cauterization	37	3	4	0
Amputation of cervix	5	0	1	1*
Abdominal hysterectomy	32	5 (16%)	1	8† (25%)
Totals	82	8 (11%)	8 (11%)	9 (11% of total seen; 12% of total treated)

Cures — 6 (7 per cent of total seen; 8 per cent of total treated).

*Well 26 yr. later.

†Well 15 to 25 yr. later, 5; died of "diabetes" 1 yr. later, 1; died of recurrence 4 mo. later, 1; radium for recurrence 2 yr. later, died of disease 2 yr. later, 1.

From October 1, 1902 to 1913 — 82 Cases (Table 1).* There was only one complication recorded in this group — a vesicovaginal fistula following application of radium elsewhere for a recurrence one year and five months after hysterectomy. The first attempt at closure, six months after radium, failed; a second attempt, 10 months after radium, succeeded. Death from recurrence took place four years and four months after hysterectomy.

From 1914 to 1918 — 79 Cases (Table 2). One of the 26 patients submitted to radical operation was sixty-six years old and had fairly marked hypertension. She was dis-

*In Table 1 the term "cure" is employed. This is intended to signify that we do not regard a patient as beyond the possibility of recurrence until she has lived at least twelve years following treatment, for 3 patients (Tables 2, 3 and 4) have succumbed to definite, though not microscopically proved, recurrence ten years and two months, ten years and five months, and eleven years and three months, respectively, after therapy. Another (Table 2) died fourteen years and six months after treatment of "carcinoma of the liver, metastatic from carcinoma of the cervix," according to the death certificate. If this case were authentic it would be so unusual, for this or any other series, as not to alter appreciably the twelve-year line for absolute cure.

Patients dying of unmistakable intercurrent disease before twelve years are tabulated with those dying of cervical cancer, since without autopsy there is no way of proving that a recurrence may not have been present. In the tables a few patients are recorded in quotations as having died of other cancers, but it has been impossible to obtain sufficient evidence to make the quoted diagnoses more acceptable than that of recurrent cervical cancer.

charged as well on the nineteenth postoperative day, her convalescence having been complicated by pelvic sepsis of only moderate severity, and died eighteen days later of unknown cause. We have rated this an operative death. There was a postoperative complication in 2 cases in this group: a small incisional hernia in a cured patient, and in another a vesicovaginal fistula which healed spontaneously

Three of the patients treated with radium after operation developed fistulas: the vesicovaginal fistula of one was present six months after radium treatment, an attempt at closure failed and the patient died of recurrence four years and five months after hysterectomy. Both rectovaginal and vesicovaginal fistulas, completely inoperable, followed postoperative radium in the other two patients, who were

TABLE 2. *Summary of Treatment and Results, 1914 to 1918, Inclusive.*

TREATMENT	NO. OF CASES	OPERATIVE DEATHS	PATIENTS UNTRACEABLE AT 5 YR.	PATIENTS ALIVE AT 5 YR.
Untreated	9	—	2	0
Radical operation	26	3 (12%)	0	11*
Radical operation, then radium (1 to 11 mo. postoperatively)	11	0	0	2†
Five-year survivors of above two groups — 13 (35 per cent)				
Radium, then radical operation	10	1 (10%)	1	2§
Radium	23	0	0	0
Totals	79	4 (6%)	3 (4%)	15 (19% of total seen; 21% of total treated)
CURES — 8 (10 per cent of total seen; 11 per cent of total treated).				

*Well 15 yr. later, 5; untraceable 2 yr. later, 2; died of "heart trouble" 10 yr. later, 1; died of recurrence 3 yr. later, 1; radium for recurrence 3 yr. later, died of disease 4 yr. later, 1; radium for recurrence 1 yr. later, died of uremia following exploratory laparotomy, at which time tumor was found to involve the ureters, 4 yr. later, 1.

†Died of "carcinoma of liver, metastatic from cervix" 10 yr. later, 1; died "suddenly" (aged 68) 11 yr. later, 1.

§Died of pneumonia 6 mo. later, 1; died of unknown cause 1 yr. later, 1.

seven months after operation and two and a half months before death from recurrence.

During this period radium was first employed. The dosage and screening were almost entirely a matter of trial and error, there being practically no precedents on which to base the manner of use. Four capsules of 0.5 mm. of silver containing glass capsules filled with radium salt, the equivalent of 25 mg. of metallic radium each,

the long-time survivors in this group. One of those receiving radium before operation established a rectovaginal fistula within two months of operation and died of recurrence one year and eight months later.

During these years there was, in general, no definite plan behind the administration of radium before and after surgery. Preoperative radium was given in varying doses at varying intervals up to six months in otherwise seem-

TABLE 3. *Summary of Treatment and Results, 1919 to 1923, Inclusive.*

TREATMENT	NO. OF CASES	OPERATIVE DEATHS	PATIENTS UNTRACEABLE AT 5 YR.	PATIENTS ALIVE AT 5 YR.
Untreated	5	—	1	0
Radical operation	18	1 (6%)	0	9*
Radical operation, then radium (1 mo. to 3 yr. postoperatively)	13	0	0	5†
Five-year survivors of above two groups — 14 (45 per cent)				
Radium, then radical operation	2	0	0	0
Radium	82	1 (sepsis)	1	14§ (17%)
Totals	120	2 (2%)	2 (2%)	28 (23% of total seen; 24% of total treated)
CURES — 12 (10 per cent of total seen and of total treated).				
TEN-YEAR SURVIVORS — 14 (12 per cent of total seen and of total treated).				

*Well 9 to 13 yr. later, 3; untraceable 2 yr. later, 1; died of "carcinoma of stomach" 10 mo. later, 1; died of "carcinoma of sigmoid" 5 yr. later, 1; died of recurrence 2 mo. later, 2; died of recurrence 2 yr. later, 1.

†Well 12 yr. later, 1; died following operation for intestinal obstruction (no cancer found) 3 yr. later, 1; died of recurrence 2 mo. later, 1; died of recurrence 1 yr. later, 1; radium for recurrence 2 and 3 yr. later, died of the disease 2 yr. later, 1.

§Well 9 to 14 yr. later, 6; untraceable 1 yr. later 1; died of cardiovascular disease 6 yr. (aged 67) and 9 yr. (aged 62) later, 2; died of pneumonia 10 yr. later, 1; died of recurrence 1 and 2 yr. later, 2; radium for recurrence 2 yr. later, died of recurrence 1 yr. later, 1; radium for recurrence 1 yr. after first application. died of congestive heart failure (aged 75) 8 yr. later, 1.

made up this hospital's original stock. The only other screening was the rubber used in application, according to Graves[3]; that is, the capsules were placed in tandem in rubber tubing for intracervical and uterine insertion, and plastered to coins and covered with rubber dam for cervical and vaginal abutment. Single doses varied from 600 to 4800 mg. hr., total doses from 600 to 11,200 mg. hr. One to four treatments were given, the intervals between them ranging from one week to five months. A few deaths might be attributed to overdosage were it not that only well-advanced cases were given irradiation, the more favorable ones being reserved for operation.

ingly inoperable cases, in the hope of rendering them operable. The number of cases so managed was small and the outcomes were disappointing, for the apparently obvious reason that the periphery of the disease was not effectively irradiated. Following operation, radium was usually not applied until recurrence was present. It seems that during these early years this element was regarded more as a palliative than as a prophylactic or curative method. Furthermore, the postoperative doses were kept small, 600 to 1600, rarely 2400, mg. hr., for fear of damage to the bladder or rectum. Since radium was not employed immediately after operation unless there was

real doubt as to the completeness of the extirpation, and since it was used later in those cases in which operation clearly had not been successful, a fairer estimate of the results of surgery is obtained by combining the "operation" and "operation, then radium" groups in calculating five-year survivors.

From 1919 to 1923 — 120 Cases (Table 3). Only 1 of the patients submitted to operation developed an incisional hernia. Another reported herself well fourteen months after operation and died of intestinal obstruction one month later. Two other cases of obstruction among the patients of this period are recorded in Table 3. In the radium-treated group, 3 patients developed vesicovaginal fistulas and 3 rectovaginal fistulas. Both types of fistula became established in 2 others. Since all these were terminal cases, it is impossible to estimate how much of the damage was due to irradiation.

During this era the tendency was to reduce the number of doses of radium and the intervals between them. Quite a few single treatments were given. It is interesting that 3 of the absolute cures were achieved with a single application each of 2400 to 2550 mg. hr. and 2 with 3150 and 3375 mg. hr., respectively. These were the first favorable cases in which radium was tried in preference to surgery because the patients were poor risks on account of old age, obesity and cardiovascular disease. Large amounts of radium were avoided apparently because of the fear of complications, a fear unfortunately engendered by earlier experiences in which the complications of advancing disease had been mistaken for ill effects of irradiation, and in a few of which the dire effects of overdosage had been observed.

In March, 1922, the hospital's stock of radium was augmented to 225 mg. by the addition of two 50-mg. capsules and two 12.5-mg. needles. There was no change in screening or technic of application, and the postoperative doses remained small. At first there was some timidity about leaving as much as 200 or 225 mg. in a patient for more than twelve or fourteen hours, but in 1923 single doses of 200 or 225 mg. for twenty-four hours gradually became acceptable.

From 1924 to 1928 — 225 Cases (Table 4). Deaths from radium in hopeless cases are possibly more frequent than recorded, not only because it is difficult in such cases to separate the untoward effects of treatment from those caused by progress of the disease, but also because so often adequate clinical details of terminal courses are lacking. The 2 deaths following radium were due to sepsis eighteen and sixty-five days, respectively, after application. It apparently is simply a matter of good fortune that such outcomes are not more frequent, since a considerable number of patients with pelvic inflammation or dangerously infected cancers, or both, must of necessity be manipulated and irradiated. Two other patients had post-radiation cellulitis and abscess without fatality, although they were very ill for three months and had then only a short period of comfort before succumbing to their cancers. Six patients, who failed to survive five years, came to colostomy for obstruction from the disease three months to two years and ten months after radium treatment. Another obstruction in this radium-treated group occurred in the patient listed in Table 4 as having died of carcinoma of the rectum nine years and three months after the first treatment — by 4800 mg. hr. in October, 1924, for frank squamous carcinoma. At five years she was well and examination disclosed no evidence of recurrence. Two years and three months later she returned, having had rectal pain and bleeding for three months. Under anesthesia an annular constriction of the rectum at the level of the cervix was palpated — surface biopsy showed necrotic tissue. Curettage of the endocervix brought away tissue which Dr. Frank B. Mallory termed adenocarcinoma of intestinal origin. There was fixation of the broad ligaments. One hundred milligrams of radium were left in the cervical canal and vaginal vault for twenty-four hours. Two weeks afterward colostomy was made for obstruction; the patient survived for two more years. Although her death is attributed to cancer of the rectum, she may well have had deep pelvic recurrence of her cervical tumor as well.

Still another obstruction occurred, in this case due to an irradiation stricture of the rectosigmoid that manifested itself five months after application to the cervix and uterus

TABLE 4. *Summary of Treatment and Results, 1924 to 1928, Inclusive.*

TREATMENT	NO. OF CASES	OPERATIVE DEATHS	PATIENTS UNTRACEABLE AT 5 YR.	PATIENTS ALIVE AT 5 YR.
Untreated	7	—	0	0
Amputation of cervix, then radium	1*	0	0	0
Radical operation	24†	1 (4%)	0	15§
Radical operation, then radium (1 mo. to 3 yr. postoperatively)	8	0	0	2¶
Five-year survivors of above two groups — 17 (53 per cent)				
Radium	185**	2 (1%)	5	46‡ (25%)
Totals	225	3 (1%)	5 (2%)	63 (28% of total seen; 29% of total treated)

CURES — 27 (12 per cent of total seen and of total treated).

TEN-YEAR SURVIVORS — 46 (20 per cent of total seen; 21 per cent of total treated).

*Died of cardiovascular disease 4 yr. after operation.

†Died of cerebral hemorrhage 2 yr. after operation, 1.

§Well 5 to 9 yr. later, 11; untraceable 1 yr. later, 1; died of cardiovascular disease 3 yr. later, 1; died following operation for primary carcinoma of sigmoid 3 yr. later, 1; died of recurrence 3 yr. later, 1.

¶Well 7 yr. later, 1; died of recurrence 1 yr. later, 1.

**Died of cardiovascular disease (aged 49, 50, 65, 67, 75 and 76) before 5 yr. after operation, 6.

‡Well 5 to 10 yr. later, 28; died of pneumonia (aged 53) 2 yr. later, 1; died of cardiovascular disease (aged 65) 4 yr. later, 1; untraceable 3 yr. later, 1; died of "carcinoma of bladder" 3 yr. (aged 75) and 5 yr. (aged 82) later, 2; died of adenocarcinoma of rectum 4 yr. later, 1; left eye enucleated for melanoma of choroid 4 yr. after radium, died of metastatic melanoma 6 yr. later, 1; died of pyonephrosis (aged 76) 6 yr. later, 1; died of "diabetes" (aged 69) 6 yr. later, 1; died of cardiovascular disease (aged 74) 7 yr. later, 1; operation for primary vulval carcinoma 2 yr. later, operation for recurrence of vulval cancer 4 yr. later, well since then, 1; died of recurrence within 1 yr., 4; died of recurrence 3 yr. (aged 63) and 4 yr. (aged 72) later, 2; exploratory laparotomy with implantation of radon in lymph node at bifurcation of left common iliac artery 1 yr. after radium, well at 5 yr. despite mass in left side of pelvis, died 6 yr. (aged 62) later, 1.

of 200 mg., screened by 0.5 mm. of silver and 1.0 mm. of brass, for 30 hours. A colostomy was made. Five years and six months later resection of the rectosigmoid and tube anastomosis were performed preliminary to closure of the colostomy. The patient was well ten years and ten months after radiation.

Only one other complication of any severity took place among the 34 patients of this radium-treated group (the majority receiving single doses of 4800 to 6000 mg. hr.) who were alive ten or more years later, namely a rectal stricture demanding dilatation seven months after 6750 mg. hr., screening as above — the patient since remaining well for ten years. The relative infrequency of serious complications from radium in those patients who are destined to survive is indicated in Table 3 (only one obstruction in the radium group, and that after a heavy retreatment for recurrence), and is quite apparent in this larger series.

Five patients of this same group developed fistulas: a vesicovaginal sinus appeared one month after radium treatment in an advanced case; a rectovaginal fistula opened nineteen months after radium treatment, the patient surviving for twenty-one months afterward; another patient's rectovaginal fistula appeared terminally. Two other patients had double fistulas terminally.

There were complications in 2 of the patients submitted to hysterectomy: a postoperative hernia, and a vesicovaginal fistula which was closed successfully one year after operation and one year and eleven months before death from recurrence.

Of those patients receiving radium following operation, one died after enterostomy for small intestinal obstruction from recurrence; another developed double fistulas terminally.

The majority of the radium treatments during the years 1924 to 1928 consisted of a single dose of 200 or 225 mg. for twenty-four to thirty hours, the largest single dose being 6750 mg. hr. By April, 1925, applicators of 0.5 mm. of brass (namely tubes of various lengths for carrying the capsules of radium into cervical and uterine canals, and round, flat pillboxes to hold the capsules against the cervix and the vaginal fornices) had been devised and were being put into use, their purpose being to increase screening and to facilitate the placing and holding of the radium. In 1927 a new set of practically identical applicators, but consisting of 1 mm. of brass, was put into regular service.[2, 4] The rationale of the brass filtration was to eliminate almost all the so-called "soft" or ulcerative radiation. Four more 25-mg. and two more 50-mg. capsules of radium were added to the hospital's stock in the spring of 1928, making a total of 425 mg., and thus allowing more latitude in the matter of amount and distribution.

From 1929 to 1933 — 274 Cases (Table 5). Beginning sporadically in October, 1930, and with increasing frequency through 1932, radium was administered in two doses of 2400 to 3600 mg. hr. each within a month, usually within two weeks of each other, for a total of 4800 to 6000 mg. hr., and occasionally even more. Moreover, early in 1931 additional screening of 1 mm. of lead was built around the brass-tube applicators with the intention of obtaining by such filtration pure, very short-wave gamma radiation. A comparison of the results from radium alone in Tables 3, 4 and 5 reveals an increase of five-year salvage from 17 to 25 to 28 per cent during the years when fairly radical changes in technic were being introduced. Nevertheless, it is impossible to show that these improved results were not a coincidence or due simply to the employment of large doses of radium, or that they were the result of the use of the applicators and the augmentation of filtration. It can be stated only that the applicators have facilitated the handling and placing of the radium, and that they may have played a part in preventing further complications from irradiation among the survivors. The fact that no late recurrences have yet made their appearance among those treated by radium alone between 1929 and 1933, inclusive, although 19 of the 30 five-year survivors have already reached their seventh to tenth year, suggests an increased effectiveness of technic.

TABLE 5. *Summary of Treatment and Results, 1929 to 1933, Inclusive.*

TREATMENT	NO. OF CASES	OPERATIVE DEATHS	PATIENTS UNTRACEABLE AT 5 YR.	PATIENTS ALIVE AT 5 YR.
Untreated	3	—	0	0
Amputation of cervix	1	0	0	1*
Amputation of cervix and irradiation	3	0	0	2
Hysterectomy	1	1 (pneumonia)	0	0
Hysterectomy, then irradiation (within 2 mo.)	4	0	0	4
Radium, then hysterectomy	2	0	0	1
Radium	106†	4 (4%)	4	30§ (28%)
Radium, then x-radiation	154¶	0	1	65‡ (42%)
Totals	274	5 (2%)	5 (2%)	103 (38% of total seen and of total treated)

*Well 5 yr. later.

†Died of intercurrent disease within 5 yr., 2.

§Died of cardiovascular disease (aged 64, 67, 70 and 86) 7 mo. to 2 yr. later, 4; died of recurrence 1 mo. later, 1.

¶Died of cardiovascular disease (aged 53, 53, 66, 66 and 81) within 5 yr., 5.

‡Radium and x-radiation for squamous cell carcinoma of left lower vagina and left labium minus (? recurrence or primary) 10 mo. later, 1; x-radiation for recurrence in vaginal vault 9 mo. later, alive and comfortable 1 yr. later, 1; died of complications without recurrence 3 mo. later, 1; died of recurrence 4 mo. later, 1.

The main objective of the two-dose plan was to make the second dose more effective by eliminating the local disease with the first; for example, it is often impossible to locate the cervical canal in cases with everting growths, and even if the canal can be found, the disease may be tamponading the surrounding tissues away from the radium. By the time of the second application the condition is nearly always markedly improved — the canal can easily be found and the surrounding tissues have returned to more normal position, owing both to dissolution of the cancer and to better drainage, with alleviation of edema and possibly local infection as well. (The same effect has been accomplished by the use of x-rays before radium, a procedure followed almost consistently at this clinic since the fall of 1937.) Since 1932 the double-dose method has been employed in the majority of cases.

Furthermore, in the spring of 1931 we began using x-ray therapy, and by 1932 this was prescribed almost routinely

(exceptions were made for the very earliest cancers), the purpose being to reach areas of disease that were inaccessible to the influence of radium. Dr. John W. Meachen, roentgenologist to the Free Hospital for Women from 1924 to 1937, heartily co-operated in taking charge of practically all the treatments. Portals of entry varied from 10 by 10 to 20 by 20 cm.; target distance was 50 cm.; filtration consisted of 0.5 mm. of copper and 1 mm. of aluminum; kilovoltage varied from 180 to 200, and milliamperage from 5 to 8. Individual treatments of 400 to 930 r were given, the great majority being of 400 r. Treatments were administered daily for three or four, usually four, days and through three or four, usually four, portals, one or two anterior and two posterior. In general the patients received a series of four treatments, totaling 1600 r, immediately on discharge following examination under anesthesia, biopsy and first application of radium. A second series was given usually about two months after the first. Quite a few patients received a third series, and a number even a fourth series. Actually there was considerable variation, both as to intervals between series of treatments and as to total dosage administered. All patients who received any x-radiation at all are included in the radium and x-ray group, but 21 received 1600 r or less for various reasons and 33 got 2800 r or less, the remaining 121 receiving total doses of 3200 to 8200 r. One hundred and nine patients of the whole group of 154 either had as much x-radiation as they were to get within six months of first radium treatment, or had 3200 r of their total quotas within six months. Twenty-one began to have x-radiation six months to a year after first radium treatment; and 24 began to have x-radiation over a year after first radium treatment. The reason why these patients received their x-ray treatment so late is because immediate postoperative x-radiation had not been adopted at the time of their first admission — they were referred for x-ray from the follow-up clinic on the supposition that this, though given late, might do them more good than harm. We have come to believe that the best procedure is to give all irradiation within a period of four to six weeks.

Discussion

Results of Treatment in the Groups Summarized in Table 5

Amputation of the cervix and irradiation. The 2 survivors in this group had had x-ray in addition to radium following operation, at which 1 patient was found to have endometriosis of the rectovaginal septum and early, though grossly apparent, cancer. Because she had prolapse with symptoms, and there being no other palpable evidence of endometriosis or cancer, amputation and plastic were elected. One month later 200 mg. of radium was applied locally for twenty-four hours, and within six months three series of x-ray treatments totaling 8370 r were given. A severe generalized pelvic reaction ensued, culminating in a rectovaginal fistula eleven months after operation, in addition to about a year of invalidism. The patient was well and had only mild annoyance from the fistula six years and ten months after amputation of the cervix. Her cancer obviously had been overtreated, but we have wondered whether internal, intangible endometriosis might not have contributed in some way to the unusually severe reaction.

Hysterectomy and irradiation. The 4 patients who received hysterectomy and then irradiation had radium locally within two months of operation; 2 of them received x-radiation also. Complications developed in one of the latter — cystitis coming on thirteen months from the beginning of irradiation, giving symptoms for six months and persisting for a year, during which several dilatations of a stricture of the right ureter were performed, there being some hydronephrosis; and a postoperative hernia, repaired early in the sixth postoperative year, by which time the urinary tract was normal.

Radium. Of the 4 postoperative deaths in the cases treated with radium alone, 1 was due to peritonitis nine days after palliative application to very advanced disease. One was due to "peritonitis" eighteen days after treatment, the patient having convalesced without mishap for ten days. This death probably resulted from an exacerbation of a pelvic inflammation, although the only palpable abnormality of the internal genitalia at operation was an enlarged uterus. One was due to agranulocytic angina eighteen days after radium treatment. This patient received a transfusion of blood before her first treatment because of fairly marked anemia. There was a moderate postoperative febrile reaction; she was discharged on the 6th day, having had no drugs of the amidopyrine type. Seven days later her terminal illness made its onset in the guise of a "cold." The fourth death was due to alleged pulmonary embolism forty days after radium.

Intestinal obstruction resulting in abdominal cramps and vomiting of two days' duration brought another patient to operation one hundred and fourteen days after radium application. A 25-cm. loop of necrotic ileum, the constricted apex of which was freshly adherent in the pouch of Douglas, was excised. Because of shock, no anastomosis was attempted. The patient failed to rally and died three days later. A permit for autopsy was not obtained, although cancer was palpably present.

Three patients in this radium-treated group are recorded as having had rectovaginal fistulas terminally. Only 1 of the 30 five-year survivors of this group had significant complications: double fistulas appeared fifteen months afterward, while the patient was convalescing from an operation for acute strangulation of a loop of ileum in a left femoral hernia, resection being necessary. By the time further surgery seemed advisable she preferred to carry on with her fistulas. She died of cardiovascular disease at the age of seventy, six years and three months after the first treatment. Three other survivors had radium cystitis coming before the third year and lasting one, six and twelve months, respectively, without ensuing ureteral stenosis.

Radium and x-radiation. Though there were in the group treated by radium, then x-radiation, no immediate or early deaths after treatment, 3 later deaths are to be laid to complications — and further casualties may still eventuate from the combined treatment as given during that period.

The first fatality took place as follows. Four months after a sequence of treatments, namely 3000 mg. hr. of radium, 1600 r, 2250 mg. hr. and 1600 r, dilatation of the cervix was performed for pyometra associated with severe pelvic pain and fever. A month later dilatation of the cervix for presumed recurrent pyometra disclosed a rectouterocervicovaginal fistula. The pelvic tissues were very indurated. Cancer was not believed to be present, since the primary lesion had been described as about 2 mm. in diameter. Death, apparently from chronic sepsis, ensued one year from the first admission. In retrospect it seems that a colostomy would have been salutary. The second patient's inverting disease had palpably involved the left broad ligament when she was first treated by 4800 mg. hr. of radium. Because of pain, discharge and induration of the broad ligaments, another local application of 3000 mg. hr. was given 6 months later, followed during the next three months by two series of x-ray treatments of 1600 r each. The patient was admitted for terminal care one year after the first radium treatment, and died of uremia eight months later, her entire terminal course seeming to be compatible with advancing disease, even to the appearance of double fistulas a few months before death. At autopsy a special effort to find tumor was fruitless. The kidneys showed active and healed pyelonephritis; there was chronic inflammation of the bladder, ureters and rectum. The third death from complications took place five years and three months after the first treatment, consisting of 4800 mg. hr. For one year the patient had been well and examinations had disclosed no evidence of recurrence. Then dysuria, pain in the left lower abdomen and tender induration on the left felt by rectum (probably due to irradiation and not to recurrence) led to x-radiation, 3200 r in less than one month. By the third post-radium year a vesicovaginal fistula was present, the patient being in other respects well, and examination revealing no other palpable abnormality beyond soft pelvic scarring. Five years and seven weeks after the first treatment, examination and biopsy of the cervix and vulva were performed under anesthesia because of one month's vaginal staining and swelling of the vulva, which was whitened, thickened and irritated. Ten days after this procedure uremia made its entirely unexpected onset; bilateral ureterostomy was of no avail. Autopsy failed to reveal any evidence of recurrent cancer. There were bilateral ureteral stenosis with chronic inflammation, bilateral chronic pyelitis and chronic pyonephrosis.

Because of these 3 cases, we are alarmed at the possibility that other deaths in this radium and x-ray group may have been due to treatment and not to advancing disease. On the other hand, the follow-ups have been careful, and known complications before terminal courses were well under way were not unreasonably numerous or severe. The following complications were noted: proctitis, 2 cases; proctitis with resulting stricture, 1 case; rectovaginal fistula, 4 cases; rectovaginal and vesicovaginal fistulas, 3 cases. Since, however, during the last ten years the majority of patients with apparently advanced recurrence have been referred elsewhere for terminal care, we may have lost opportunities for prolonging life and decreasing discomfort by colostomy or nephrostomy for intestinal obstruction or ureteral stricture due to tumor or possibly irradiation reaction. In this connection it was surprising to discover how infrequently uremia had been included in death certificates as a terminal event in carcinoma of the cervix — seven times in 394 certificates. This undoubtedly common omission may be easily explained by the fact that the picture of uremia can be so clouded by cancer cachexia, the use of drugs and the presence of fistulas and a laissez-faire attitude.

It was emphasized above that complications among the five-or-more-year survivors without cancer in the groups treated by radium alone were infrequent. The survivors in this radium and x-ray group, on the other hand, have suffered an undue share of complications. The finding of some of the otherwise unsuspected damage may possibly be laid to more frequent follow-up examinations, including studies of urinary and intestinal tracts, but on the whole it seems that the increase of complications must be laid to supplementary x-radiation. Furthermore, owing to the difficulty and occasional impossibility of discriminating between recurrent disease and irradiation reaction as regards pelvic induration, some of the damage may be laid to unnecessary as well as necessary (based on biopsied recurrence) retreatment with both radium and x-rays. We have been chagrined, though pleased, to find 3 patients whom we had referred for terminal care between seven and fourteen months after first treatment, well at six to seven years. In cases of doubt we had tended to prescribe further irradiation at the risk of considerable destruction of tissues. In general, patients with irradiation reactions look much healthier than their symptoms warrant, whereas those with recurrence look worse than they feel.

Three deaths in this group we have attributed to treatment. Of the 65 patients alive at five years, 25 had a total of sixty-three complications, of which five were or are serious enough to threaten life, namely, a pelvic abscess resulting in obstruction and colostomy, an incarceration of an irradiated loop of sigmoid in the pouch of Douglas, with partial obstruction demanding operative release, and three functionless kidneys due to ureteral stricture. Fourteen patients had irradiation proctitis, which generally makes itself known six to twelve months after first treatment, from which stricture resulted in 4 (in 1 of whom a rectovaginal fistula broke through six years and five months after first treatment) and rectovaginal fistula in 4. In the remainder the rectal irritation was short-lived and not disabling. Thirteen pa-

tients had irradiation cystitis severe enough to give symptoms one to over five years after the start of treatment. A vesicovaginal fistula ensued in 2 patients. The cystitis had been severe and persistent in the 3 patients whose ureters became stenosed, resulting in unilateral functionless kidneys. It was symptomatically only temporary in the others. One elderly patient's ilia showed focal bony resorption, pain on walking and limitation of motion, leading to this finding. Nineteen patients had diffuse scarring of the pelvic tissues, which softened somewhat over a period of two or three years. The scarring does not give specific symptoms, but easily misleads one into prescribing further irradiation. Marked reaction of the skin and subcutaneous tissues of the lower abdomen, buttocks and sacrum was present in most, but not all, the survivors who had received 3200 r or more. It took the form of superficial telangiectasis with thickening of the dermis and scarring of the subcutaneous layer almost to actual induration. Occasional severe itching seemed to be the only symptom. Contrary to expectation, incisions into these devitalized tissues healed satisfactorily.

This enumeration of complications is likely to leave the impression that the survivors following radium and supplementary x-radiation are leading a more or less crippled, unhappy existence, but such is not the case. As we follow them we are surprised at their state of general well-being and at their adjustment to such residual disabilities as fistulas and strictures of the rectum. Feeling so well, they are likely only with some difficulty to be persuaded to undergo the discomfort of continued periodic genito-urinary and lower intestinal investigation.

No rectovaginal fistula resulting from irradiation has been cured in this clinic. The few patients on whom operation was attempted preferred fistula to colostomy. Unless rectal strictures from irradiation are really disturbing, we have found it more satisfactory to leave them alone, since the trauma of dilatation gives more discomfort than the lesion itself — and dilatation does not eradicate it. Our few attempts to repair vesicovaginal fistulas from irradiation have only ameliorated the condition.

None of the 25 patients who developed complications had had less than a total of 4800 mg. hr. of radium, and 18 had had 6000 to 10,200 mg. hr. Two had received retreatment for biopsied recurrence after having already had their supposedly full quota of irradiation; 8 had received retreatment for presumed recurrence. Only one of the group received as little as 1600 r of x-radiation; the others got totals of 3200 to 7100 r, as follows: 3200 to 4000 r, 9 cases; 4800 r, 10 cases; 5000 to 6000 r, 2 cases; 6000 to 7100 r, 3 cases. That the remaining 40 survivors in this group have thus far failed to suffer troubles worth mentioning, although they had practically similar treatment, including retreatments, emphasizes again the varied and unpredictable responses of tissues to irradiation.

It seems hardly necessary to make a general summary of the complications described throughout this review or to present their percentage incidences. They were obviously frequent, and probably more often due to cancer than to treatment, except among those who had x-radiation. To avoid complications and at the same time treat cervical cancer adequately is beyond our present abilities. Fortunately, suffering from these disabilities is not so great as would be surmised from their description and enumeration. Accepting a pretty high incidence of complications as inevitable, efforts should be made by careful follow-up to discover them early and prevent serious sequelae; for example, untreated ureteral stricture is the most important of the potentially lethal sequelae, intestinal obstruction being the other really serious possibility, once the danger of severe sepsis is past. We make it a rule when giving patients their next appointments to stress that they report at any time should anything new or unusual develop, in the hope thereby of diagnosing early intestinal obstruction or irradiation cystitis which seems to favor ureteral stricture. We have not yet found ureteral damage in any cancer-free patient who had not had cystitis with symptoms.

During the years covered by this report, periodic examination of the urinary tract had not attained the importance it now holds in the follow-up regime. Damage that could have been avoided has been discovered only among the radium and x-ray group of 1929 to 1933. Ureteral strictures are now being found at an earlier stage — and not often, at that — and have thus far been amenable to cystoscopic dilatation.

That supplementary x-radiation was responsible for the improved results shown in Table 5 is indicated by the following. The series is large enough so as not to be weighted favorably by a chance run of cases with a good result. The disease of 32 (49 per cent) of the 65 five-year survivors had been described as having extended beyond the confines of the cervix. On the other hand, of the "radium alone" groups for 1924 to 1928 and 1929 to 1933, 46 per cent and 33 per cent of the five-year survivors' tumors had been described as inoperable; that is, the number of favorable cases was greater, yet not more than 28 per cent of the patients survived five years, as against 42 per cent in this radium and x-ray series. Another point support-

ing the value of supplementary x-radiation is that 57 (51 per cent of them had been graded as inoperable), or 47 per cent, of the 121 patients of this group who had received a total of at least 3200 r were alive at five years. Furthermore, it may turn out to be significant that thus far only 1 definite late recurrence has developed (at five years and nine months in a patient whose tumor had been originally classed as advanced to the point of fixation [Table 5]), 33 of the 63 patients well at five years having already reached their seventh to tenth year.

Pyometra

Pyometra is more often a complication of the disease than of treatment. Thus 29 patients had this condition at the time treatment was instituted, and 4 of them developed it again following irradiation. Either by coincidence or because of the combined treatment, 8 patients of the radium and x-ray group, 1929 to 1933, developed pyometra during or after treatment. Since only 5 of these 37 patients were alive at five years, pyometra would seem to accompany a poor prognosis, despite the fact that it has not incommoded therapeutic measures to any considerable degree. Treatment has been given either immediately on drainage or within a month, without other mishap. It is perhaps significant that the 5 survivors had had x-radiation, no patient with pyometra before 1930 having lived for five years. (Two had had a preoperative pyometra, 1 a postoperative pyometra, and 2 had had both preoperative and postoperative pyometras.)

Clinical Classification and Pathological Grading

The results in sizable series of consecutive cases of cancer are the really important ones from the point of view of comparison and evaluation of treatments. Hence, in the above compilations, consideration of groups separated out on the basis of clinical rating of the extent of the cancers and on the basis of pathological grading of the degree of malignancy has been practically disregarded. After all, clinical classification is at best fraught with uncertainty, since so many patients with apparently early operable tumors fail to survive, whereas an occasional case with seemingly advanced local growth becomes cured. The not infrequent death from distant metastasis in the absence of any evidence of local recurrence indicates that tumors discovered early enough to be cured by operation or irradiation may spread before yielding to therapy — and often enough have operators encountered pelvic metastases at laparotomy for what had been, on thorough preoperative examination, considered operable, even grossly early, cervical cancers. Likewise disappointing have been attempts to separate groups according to the microscopic picture of the tumor. How can one explain on known criteria late recurrences of microscopically highly malignant cancer after surgery, or cures of inoperable but microscopically well-differentiated, hence presumably radioresistant, cervical tumor by radium? The varied and unpredictable responses of patients and their cancers are so constantly observed as to make it obvious that other unknown factors are involved and that palpable and microscopic grading can be of only little help in evaluating therapy.

Operation versus Irradiation

There would seem to be no longer any argument in favor of operation except for microscopic or near-microscopic cancers when other pelvic disease, demanding cure for symptomatic or other reasons (for example prolapse, fibroids, ovarian tumors, endometriosis) or rendering irradiation unnecessarily risky (for example active pelvic inflammation), is present — and except for the uncommon operable cancer that is discovered to be radioresistant before the chance for possible surgical cure has passed. When other pelvic disease is present with more advanced cervical cancer, irradiation risks must be accepted and complications met as they evolve. After all, the good results of surgery have been accomplished in selected cases, but without augmenting total salvages in series of consecutive cases beyond a certain point, whereas the employment of radium and then x-radiation has been followed by a progressive improvement in the total salvage among consecutive cases. In answer to the possible suggestion that the improved results of more recent years may be due to increased percentages of favorable cases, the following figures may be given for what they are worth, namely, the percentage of tumors in the various groups described as being confined within the limits of the cervix: 1902 to 1913, 13 per cent; 1914 to 1918, 29 per cent; 1919 to 1923, 26 per cent; 1924 to 1928, 28 per cent; 1929 to 1933, 32 per cent. Thus there has been no significant increase in apparently favorable cases, and furthermore by no means all these were among the survivors.

*Carcinoma of the Cervical Stump**

From Tables 1 to 5, inclusive, have been separated out all the cases of stump carcinoma, a total of 40 for the years 1909 to 1933, inclusive, that is 6 per cent of the pathologically confirmable cases first seen or treated during those years. They are

*Three patients of the secondarily seen or treated group had had supravaginal hysterectomy elsewhere nine years, seven years, and six months, respectively, before their primary therapy. In 1 of the 40 unconfirmable cases first seen or treated at this hospital after 1902, the patient had had a supravaginal hysterectomy here seven years and ten months before the diagnosis of cervical cancer.

summarized in Table 6. There were no cases of stump carcinoma in this series before 1909. That 5 of the 12 patients who had had their hysterectomy at this hospital returned with stump carcinoma within three years deserves comment. They all almost certainly had had early and probably discoverable cancer at the time of hysterectomy. Three had had neither biopsy nor treatment of the cervix before operation (1917, 1924, 1925); 1 had had biopsy (the specimen does not show any evidence of cancer; multiple biopsies probably would have disclosed new growth) and cauterization preliminary to operation (1927) and eight months before the diagnosis of cancer; and 1 had had cervical cauterization immediately before hysterectomy (1927) and seventeen months before treatment of her endocervical adenocarcinoma. This last patient was not saved, although her tumor need hardly be stressed that patients with retained cervices should be followed for long periods, and should be warned to report for examination on the slightest of signs, such as staining or discharge.

Since carcinoma of the cervix occurs predominantly in women who have been pregnant at one time or another, the question arises as to whether it might be safe to allow the cervix to remain in nulligravidas. The answer appears to be that such a procedure is not safe, for 10 (23 per cent) of the 44 cases of stump carcinoma covered above were recorded as nulligravidas.

Retreatment

Many of the patients of this whole series received retreatment with radium, some with x-rays also, sometime after their original therapy as described above. In the great majority the presence of recurrence was assumed on the basis of the clinical findings. That most of these retreatments were futile was proved by the fatal outcomes. It is impossible to show that they had even any palliative influence, or that the few patients who turned out to be survivors had not simply had induration from previous irradiation. Retreatment for biopsied recurrence most often fails to be salutary, since usually by the time tumor that can be biopsied appears, hopeless spread has occurred. Actually only 7 patients, retreated for biopsied local recurrence, have become five-or-more-year survivors, 2 in the secondarily seen or treated group and 5 in the regular series. These recurrences were detected four months to four years after first treatment. As seen from the tables, retreatment for recurrence after the fifth year of survival has not prevented death.

TABLE 6. *Carcinoma of the cervical stump: Summary of treatment and results, 1909 to 1933, inclusive.*

PERIOD	No. of CASES	PERCENTAGE OF TOTAL CASES	HYSTERECTOMY DONE AT HOSPITAL — TIME BETWEEN OPERATION AND DIAGNOSIS OF CANCER			HYSTERECTOMY DONE ELSEWHERE — TIME BETWEEN OPERATION AND DIAGNOSIS OF CANCER			METHOD OF TREATMENT							
									VAGINAL CERVICECTOMY		ABDOMINAL CERVICECTOMY		RADIUM		RADIUM AND X-RAY	
			No. of cases	Less than 3 yr.	More than 5 yr.	No. of cases	Less than 3 yr.	More than 3 yr.	No. of Cases	Alive at 5 yr.	No. of Cases	Alive at 5 yr.	No. of Cases	Alive at 5 yr.	No. of Cases	Alive at 5 yr.
1909 to 1914	1	2.1	0	0	0	1	1	0	1	0	0					
1914 to 1919	8	10.1	3	1	2	5	3	2	0		5†	2	3	0		
1919 to 1924	4	3.3	1	0	1	3	1	2	0		1	0	3	0		
1924 to 1929	15*	6.6	6	3	3	9	4	5	0		1	1	13	6		
1929 to 1934	12	4.7	2	1	1	10	1	9	1	1	0		6	2	5	4
Totals	40		12	5	7	28	10	18	1	1	7	3	25	8	5	4

*One case was not treated.
†One operative death.
Of the 28 cases before 1929, 6, or 21 per cent, are alive at 11 to 20 years; of all cases, 16, or 40 per cent, were alive at 5 years.

Late Recurrences

We understand this term to mean recurrences after five years in those clinically well at five years after first therapy. Eliminating those patients with obvious recurrence at five years, there are left, to

had been apparently localized to the stump; the others are well more than eleven years after cancer treatment. In addition to the above two cauterizations performed before the diagnosis of cancer, there was but one other, among all the cases in this report, and that had been done elsewhere seventeen months before the finding of advanced growth.† The occurrence of stump carcinoma in such an appreciable number, and the fact that neither cauterization nor repair has been proved to be really prophylactic, make it impossible to avoid the conclusion that, when feasible, complete instead of supravaginal hysterectomy should be performed, and when neither this nor some form of cervical amputation can be undertaken, every effort should be made to rule out cervical new growth, both by thorough curettage of the canal for biopsy and by multiple biopsies from the glandular-squamous junction. If a cervix appears diseased enough to warrant cauterization or conization before supravaginal hysterectomy, the biopsies are all the more important. It

†Thirteen of all the cases in this report had had the operation of trachelorrhaphy, 12 (6 at this hospital) five to twenty years before cancer was diagnosed and 1 (not here) less than two years before the diagnosis.

1929, 106 who were well after that interval. Of these, 6 became untraceable, 9 died of intercurrent disease, 17 died of recurrent cancer of the cervix (recurrence assumed in 14, proved in 3) and 3 were alive at ten years but with the disease. Thus 67 per cent of those apparently well at five years were well at ten years. Eight of the late recurrences were in patients treated surgically (all had had squamous-cell carcinoma), 8 in those treated by radium (1 had had adenocarcinoma) and 4 in those treated by both means (all had had squamous carcinoma).

Multiple Malignancy

In the series are only 6, possibly 7, cases which were proved to have had another type of malignancy in addition to that of the cervix: cancer of the endometrium at the same time; cancer of the breast at the same time; melanoma of the choroid, diagnosed four years and four months after treatment of squamous cancer of the cervix; cancer of the vulva, diagnosed seven years after treatment of cancer of the cervix; carcinoma of the sigmoid, diagnosed eight years and eight months after cancer of the cervix treated; carcinoma of the rectum, diagnosed seven years and three months after treatment of the cervical lesion; carcinoma of the lower left vagina and left labium minus, diagnosed five years and ten months after treatment of cervical cancer. Since late recurrences of cancer of the cervix are unlikely to involve the lower vagina or labia without evidence of recurrence higher up, we are inclined to believe that the tumor in the last case was a new lesion, although microscopically it is indistinguishable from the original sections of the cervix. We conclude, from the various other malignancies recorded in the death certificates, for example cancer of the breast, and from those reported to us, for example "cancer of the bladder," that the occurrence of multiple malignancy in this series was somewhat greater than indicated by the above proved cases.

Summary

Of the 997 consecutive cases with a clinical diagnosis of carcinoma of the uterine cervix, seen or treated at the Free Hospital for Women clinic from May 1, 1876, to January 1, 1934, 69 had had their primary treatment elsewhere and 148 (108 before and 40 after October 1, 1902) cannot now be proved to have had the disease. The body of this report is concerned with the remaining 780 consecutive, previously untreated, pathologically confirmable cases encountered from October 1, 1902, to January 1, 1934.

No significant difference in behavior or response to therapy can be discerned between the adenocarcinomas and the squamous-cell carcinomas.

The percentages of treated cases alive at five years are as follows: October 1, 1902, to 1913, 12; 1914 to 1918, 21; 1919 to 1923, 24; 1924 to 1928, 29; 1929 to 1933, 38. The percentages of treated cases alive at ten years for the same groups to 1929 are: 8, 11, 12 and 21. The percentages of treated cases considered cured, that is alive at twelve years, for the same groups to 1929 are: 8, 11, 10 and 12 (thus far, since the total number of twelve-year survivors for the 1924–1928 group will not be known until January 1, 1941).

Operative mortalities, deaths from intercurrent disease and the occurrence of other malignant tumors, proved and unproved, are included in the charts and discussion.

Complications of the disease and complications from its treatment are described and enumerated in the running discussion. Before the employment of x-radiation it appears that complications were most often due to advancing disease. Emphasis is placed on the relative infrequency of serious complications from radium alone in those patients destined to survive.

The best percentage of five-year survivors among unselected cases was achieved by the administration of supplementary 200-kv. x-radiation — 42 per cent (Table 5) — at the price of an increased number of complications to which death has been attributed thus far in 3 cases. The adjuvant effect of x-radiation is even more apparent in the 121 cases of this same group which received at least 3200 r — 47 per cent were alive at five years.

This study brings out again what has already been emphasized by other writers, namely the necessity, as part of the follow-up regime, of periodic investigation of the whole urinary tract in all cases, including those with recurrent cancer and especially in those having irradiation cystitis without evidence of cancer.

Clinical classification and pathological grading are omitted as practically useless in the evaluation of therapy.

Since improved results have been associated, first, with the use of radium in a greater number of cases, and then with the employment of supplementary x-radiation, it is reiterated that the indications for surgery in the treatment of cervical carcinoma are becoming very much restricted.

The appreciable incidence of carcinomas of the cervical stump in this series (40, or 5 per cent), and the fact that 23 per cent of them were in patients recorded as nulligravidas, re-emphasize the desirability of removing the cervix, even from those never pregnant, when hysterectomy is undertaken, or, if this is not feasible, of taking multiple

biopsies to rule out early cancer, treating the cervix if treatment is indicated for other reasons, and following the patients for long periods after operation, exhorting them to report for examination at the slightest warning sign.

Retreatment given to many patients for recurrence is salutary in but a few.

In this series, late recurrences are divided equally between patients treated surgically and those treated by radium, and 67 per cent of those apparently free of disease at five years are found to be well at ten years after primary therapy.

Thus far there have been 6 unquestionable cases of multiple malignancy in this series.

References

1. Bartlett, M. K., and Smith, G. V. S.: Carcinoma of the cervix: a study of cases treated at the Free Hospital for Women between 1875 and 1929. *Surg., Gynec. & Obst.* **52**:249-253, 1931.
2. Smith, G. V. S.; Smithwick, R. H., and Rogers, H., Jr.: Report of cases of carcinoma of cervix treated between 1875 and 1927 at Boston Free Hospital for Women. *Am. J. Obst. & Gynec.* **15**:637-650, 1928.
3. Graves, W. P.: *Gynecology*. Third edition. 936 pp. Philadelphia and London: W. B. Saunders Co., 1923. Pp. 842-844.
4. *Idem*: *Gynecology*. Fourth edition. 1016 pp. Philadelphia and London: W. B. Saunders Co., 1928. P. 929.

Discussion

Dr. George C. Wilkins, Manchester, New Hampshire: This paper presents the constantly improving results of thirty years of treatment of carcinoma of the cervix. The improvement is due to a study of the previous results, to a better understanding of the disease and especially to a gradually increasing use of radiation.

I note that there was a considerable difference in the radiation dosage during the time the method was being established. This is possibly because there were a number of different men who were giving the treatment.

Evidence is presented that radium therapy is not without troublesome sequelae, and of course we must be very alert to recognize this fact and to treat them. It is sometimes difficult to know whether the symptoms that develop one, two, three, four or five years afterward are due to the radiation or to a recurrence of the disease.

The lateness of the sequelae is a peculiar characteristic of radium treatment of cancer of the cervix. It is probable that some of the sequelae may be avoided by proper spacing of the intervals between treatments.

We have all been waiting for comparable statistics on cases treated by radium and those treated by radium plus x-ray, and the authors of this paper have demonstrated the increase in salvage with the use of deep-therapy x-ray added to radium. It must be borne in mind, however, that radium is the predominant therapeutic agency in treating cancer of the cervix; as is shown in this paper and others, there has been a salvage with radium alone in different clinics anywhere from 25 to over 30 per cent, but so far as I know, no one with this disease has been cured by x-ray alone.

I believe in the use of the x-ray first, as was advocated by Dr. Healy in Memorial Hospital. The reasons are that x-ray therapy covering a period of four or five weeks will clear up a great deal of the growth, particularly if the latter is productive, and will also clear up infection that frequently accompanies the growth. Then, when one is ready to treat the cervix with radium, it has resumed its normal shape or very near it and is clean. Since we have been using x-ray prior to radium, we have found the application of radium an easier procedure.

At the Elliot Hospital from 1920 to the present time, we have had 300 cases of carcinoma of the cervix, not including cervical-stump cases. From 1920 to 1934 we had 185 cases, all of which were treated by radium alone. The study is almost completed and only 10 of the cases have not yet been traced. If half of these 10 patients are found to be living five years after treatment, we shall have a 35 per cent five-year salvage. They have all been treated in the same way and by only two men, Dr. Dwinell and myself. We started treating these cases in one way and have continued without change. We give the patient 3500 to 4000 mg. hr. of radium for the first treatment, on the theory that this is all the patient can stand without a great deal of irritation. Then in three weeks when the irritation has subsided, we give another dose of 1800 to 2000 mg. hr. Curiously enough this coincides with the theory later advanced by Coutard of a twenty-one-day periodicity of cell susceptibility to radiation.

Dr. George M. Waterman, Providence, Rhode Island: Dr. Pemberton and Dr. Smith are to be commended on the excellence of and the improvement in their results. Their paper shows conclusively that x-ray must be regarded as an essential factor in treatment. I say this not only because of their excellent results, but also because of the results that are being reported from various other clinics in the country. Dr. Meigs has recently published some work that showed excellent results from the use of deep x-ray. In his series of 106 cases between 1929 and 1933, before the use of x-ray, the percentage of cures was 28. That is a most excellent showing.

At the Rhode Island Hospital since 1926 we have used a method a little different perhaps than that employed in most clinics. We have adopted the interstitial method of radiation, and have made use of interstitial radiation needles. These are long needles of low radium content, and they are used over long periods of time. We have had 308 patients treated by this method. Of these 97 (31 per cent) survived a five-year period.

Two years ago we reported our experience with this method. There were 173 cases with 55 survivals (32 per cent). In a recent series of 135 cases we have had 42 survivals (32 per cent). This shows that we have gone about as far as we can in the use of radium alone in the treatment of cancer of the cervix.

We believe that the method we have used is a safe one. Our morbidity and mortality figures have been even a little better than those of Dr. Pemberton and Dr. Smith's series of cases treated by radium alone, and we have had no more fistulas or late sequelae than are reported by other clinics. Our incidence of fistula runs a little under 8 per cent, which compares favorably with a series published by Ward and Sackett. With improvement in our use of x-ray therapy we hope for generally better results in years to come.

Dr. James R. Miller, Hartford, Connecticut: I hope that Dr. Pemberton will be able to bring out in his discussion to just what extent improvement has taken place over all these years. When I first started in practice, one out of ten cases would have been considered operable. Now well over half are considered operable. The one important thing in the treatment of cancer, so far as end results are concerned, is the time at which adequate treatment is begun, and that factor vitiates all statistics unless it is taken into consideration.

Dr. Joe V. Meigs, Boston: Dr. Pemberton and Dr. Smith are to be congratulated on their figures, but I believe that a division of the cases into groups, even if only into operable and inoperable, would be a fairer way to make this report. Certainly the cases seen at the Free Hospital for Women are seen earlier than those at the Pondville Hospital. Therefore, the total number of survivors must be greater and the percentage better. Fifty early cases are certainly going to do better than 50 late cases, so that division into groups is really essential for comparison. If such a division were made, I am sure that the results in this series would be about the same as in others.

I have been interested at the Pondville Hospital in the study of the urological complications of cancer of the cervix. All patients are examined with the cystoscope by the urologist and studied by intravenous pyelography. The cases under treatment are followed very carefully through their treatment, because occasionally there is a flare-up of temperature due to changes in the kidney or ureter. Drainage of the ureter and nephrostomy have been necessary on numerous occasions.

Another question I think important is what to do with cases that do not respond to x-ray and radium. If biopsies are taken throughout treatment, certain patients can be found who do not respond to radiation as demonstrated by microscopic examination. I believe that we should operate on these cases. They do not tolerate surgery well, and perhaps we ought to obtain more biopsies during roentgen therapy and decide whether or not the patient is going to respond before we give radium. This method, I believe, would lessen the possibility of fistulas.

Salvage and improvement will come from early diagnosis, recognition of kidney lesions and ability to choose those patients who are likely to respond to radiation.

Dr. Herbert A. Durfee, Burlington, Vermont: My discussion has to do with the prophylaxis of carcinoma of the cervix. Whether or not we consider this disease the result of resting tissue or of irritation from erosion, destruction of the carcinogenic zone about the external os has in my experience been 100 per cent efficient in preventing this condition. I believe that one of such procedures as simple cauterization of the zone around the external os, coagulation of that same zone, excision with a conizing knife or a Sturmdorf's operation will prevent almost all true carcinomas of the cervix.

I wish to ask whether anyone here knows of a single case in which carcinoma has developed in a cervix that has been treated by one of the four methods that I have enumerated.

Dr. Smith: I now have records of 4 cases of carcinoma of the cervix after cauterization. The diagnosis in each case was made more than five years afterward. I do not believe that cauterization should be considered a truly prophylactic measure, although in general it seems to have some value as such.

Dr. Miller asked whether an increased percentage of early cases might not have accounted for the improved results in the more recent groups. The percentages of early cases in our five groups are as follows: 1902 to 1913, 13; 1914 to 1918, 28; 1919 to 1923, 26; 1924 to 1928, 28; and 1929 to 1933, 32. This is an increase, but is not commensurate with that of the five-year survival rate. Furthermore, these so-called early cases were not all among the survivors.

Dr. Pemberton (closing): X-ray dosage is still in the experimental stage. We are now trying voltages from 400,000 to 1,000,000 to see whether there will be better results, and especially whether there is less damage to normal tissue with shorter periods of application. We believe that the method of combining radium and x-ray, especially as to whether radium needles and seeds should be used with the central application, is of little importance so long as one attempts to apply a uniform amount of radiation to all parts of the pelvis, in order that a lethal dose may reach the tumor wherever it is.

Our results are better and should be better than those in most other series, because we have included all the private cases, and they are, as a rule, less advanced than the average. This series represents a cross-section of the general population better than does a series from poor people alone.

Urological follow-up is important because the urological complications are often severe.

As regards cancer developing after cauterization of the cervix, it may take five or ten years for it to appear, so that a long period of observation is necessary before an opinion can be given.

The essential point is diagnosis of early cases by biopsy. Last year we biopsied 944 cervices, and found 8 cases of previously unsuspected cancer.

ESOPHAGOBRONCHIAL FISTULA: A RESULT OF A FOREIGN BODY*

Report of a Case

JOHN A. MURTAGH, M.D.,† AND M. DAWSON TYSON, M.D.§

HANOVER, NEW HAMPSHIRE

THIS case of esophagobronchial fistula, a consequence of a foreign body, is presented because of the resultant unusual circumstances which developed, and because of the relative infrequency of the condition. An investigation of the available literature does not reveal an entirely similar case. Many cases of fistulous communication between the esophagus and the air passages have been reported, but most of them have been the result of cancer or of congenital factors, tuberculosis or syphilis. The present case deserves a report because it definitely illustrates the possibilities of overlooking a foreign body of this type, especially when x-ray studies and an esophagoscopy are negative.

CASE REPORT

J. R., a 50-year-old white man, first presented himself at the Mary Hitchcock Memorial Hospital on October 16, 1938, with a chief complaint of persistent pain in the region of the lower sternum, and inability to take either food or fluids without coughing. Twenty-five days previously, while eating beef broth, something lodged in his throat. He attempted elimination of it by using his fingers, without success. He ate solid food, and succeeded in dislodging the foreign body from its original point of retention and moving it farther into the esophagus. At this time pain developed about the lower sternum. This pain persisted, and on any attempt to swallow was accentuated. Five days later the patient was referred to a hospital, where routine x-rays for a foreign body, with barium in the esophagus, were taken. These were reported negative and he was sent home. During this time the patient had taken only liquids. His normal weight was 158 pounds. He remained at home away from work for about 3 weeks, during which the pain was at times severe and controlled only by sedatives. At some time during this period he developed a cough on the taking of fluids. On admission the patient complained of severe sternal pain and total inability for 3 days to take either solids or liquids by mouth. His weight had decreased to 111 pounds.

Physical examination on admission showed an obviously cachectic, markedly dehydrated man. It failed to reveal anything but the objective evidence of dehydration and weight loss. The vital signs were all normal. Blood Kahn and Wassermann tests were negative. The red-cell count was 4,240,000, the white-cell count 12,900, the hemoglobin 15 gm., and the differential: polymorphonuclears, 81 per cent, lymphocytes 13 per cent and mononuclears 6 per cent. The urine gave a + test for albumin. The blood nonprotein nitrogen was 21 mg. per 100 cc., and the blood sugar 80 mg.

*From the Hitchcock Clinic, Hanover, New Hampshire.

†Instructor in otolaryngology, Dartmouth Medical School; otolaryngologist, Mary Hitchcock Memorial Hospital, Hanover.

§Member of surgical staff, Hitchcock Clinic, Hanover.

Examination by x-ray on admission (Fig. 1) was as follows:

> The chest is negative. There is no demonstrable foreign body in the esophagus. On the administration of barium there is no delay or obstruction to its passage through the esophagus. Just below the level of the hilus of the lung, however, a thin tongue of barium is seen to project laterally and forward from the esophagus into the lung, and coincident with this the patient experienced a severe paroxysm of coughing. Films taken after barium fail to reveal any of the medium in the lungs, but do show a small area of increased density just below the left hilus. The findings are those of esophagobronchial fistula.

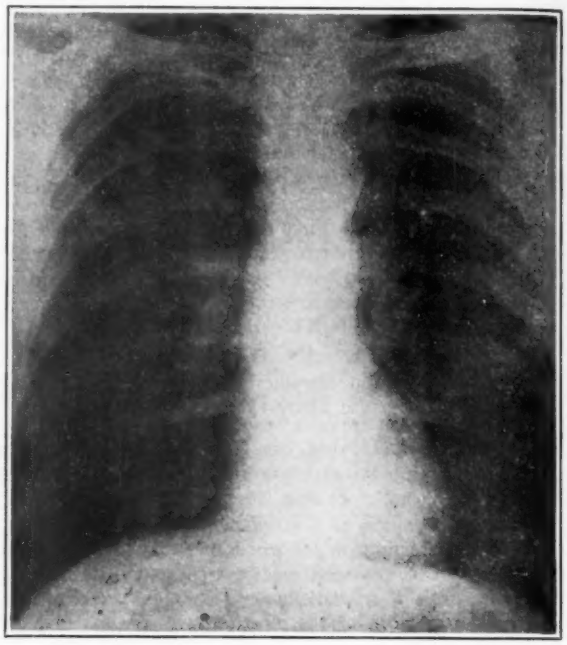


FIGURE 1. *Anteroposterior Film of the Chest.*

This was taken on the day of admission, and was reported to be negative. A lateral view was also negative.

Esophagoscopy was done. A thorough investigation of the entire esophagus failed to reveal any foreign body, but demonstrated an area of ulceration and inflammation at the level where the left main bronchus crossed the esophagus. Bronchoscopy revealed an area of marked inflammation and ulceration on the floor of the left main bronchus, approximately 1.5 cm. from the bifurcation. No foreign body was seen.

The patient was gastrostomized under local anesthesia on October 19, 1938. The day following this procedure the temperature rose to 104.5°F., the pulse to 130 and the respirations to 32. The clinical finding, supported by x-ray, was of bronchopneumonia of the right and left

lungs. There was no evidence by x-ray of mediastinal involvement.

Convalescence from this acute phase was without event. The weight on November 10 was 105 pounds. Frequent small feedings with a gastrostomy tube were resorted to, in an endeavor to eliminate the coughing up of gastric contents evidenced, in a small measure, since gastrostomy. Supportive measures, including transfusion, were also employed.

Following complete recovery from the pulmonary infection, Lipiodol was instilled intratracheally, and filling

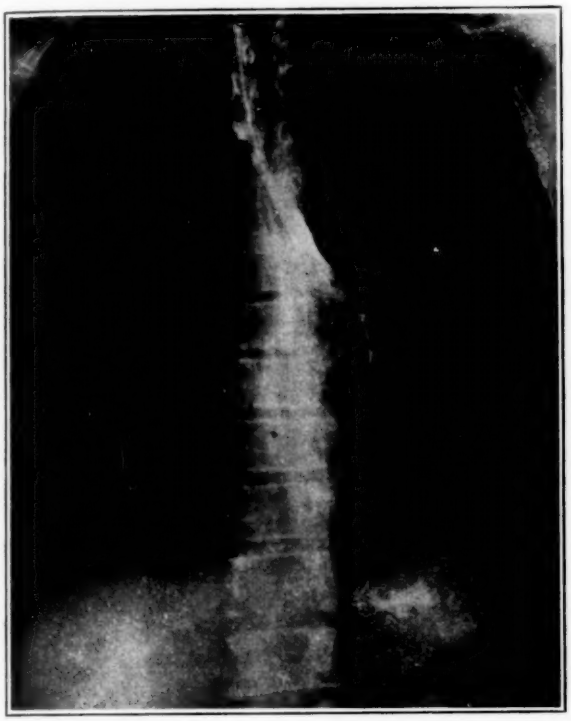


FIGURE 2. *Anteroposterior Film of the Chest.*

Lipiodol was injected intratracheally, with passage of the opaque medium through the fistula into the esophagus. Some of the Lipiodol is in the stomach. There was no evidence of a foreign body.

of the esophagus at a point approximately 2 cm. below the bifurcation of the trachea occurred, further confirming the diagnosis of esophagobronchial fistula (Fig. 2). No foreign body was in evidence.

The patient complained of pain persistently in the region of the lower sternum. Because of this persistent pain and the inability to explain the small area of increased density reported below the left hilus by x-ray, but without expecting to locate a foreign body, esophagoscopy was again done. On re-examination of the esophageal fistula, a very small triangular piece of material was seen protruding from the esophageal wall. This was grasped with a foreign-body forceps and drawn into the esophagus without any tension, and removed; it proved to be a bone. The patient's sternal pain immediately disappeared and he was decidedly more comfortable.

Feeding was continued via the gastrostomy for 1 month, when esophagoscopy was again done; the area of ulceration had disappeared and only slight inflammation was visible. It was learned that the patient had surreptitiously been drinking small amounts of fluid without distress. He was started on small feedings of soft foods and milk, without incident. In attempting to take large amounts of water, slight irritation occurred, but no coughing. Milk and soft foods caused no distress. The patient was discharged home. He returned in March, 1939, at which time bronchoscopy showed a small fistula in the left main bronchus, with no secondary inflammatory reaction. The orifice of the fistula seemed well epithelized, and there was no evidence of the esophageal fistula. Lipiodol introduced intratracheally failed to pass from the left main bronchus to the esophagus.

The patient now carries on his normal activities without any difficulty.

The difficulties presented to the roentgenologist in the determination of the existence of foreign bodies in occasional cases, both in the esophagus and in the lungs, are manifold. In spite of them only a few cases, fortunately, are overlooked. At the time of the initial examination in the case here reported, it is doubtful whether the foreign body had penetrated the esophagus, but this may have occurred without the establishment of the esophagobronchial fistula. At that time no pulmonary symptoms existed. The danger of disregarding the patient's story in spite of negative roentgen findings, no matter how thoroughly or capably done, is evident. The precariousness of giving an unqualified negative opinion with an existing history of foreign body is well known to every competent roentgenologist. In this case the foreign body was not demonstrable in a thorough investigation by x-ray on two occasions, although in the second instance a fistula had been established and the patient's general condition was obviously poor. That the bone may have been overlooked when the patient was first examined by esophagoscopy is again a possibility, although the location of the bone at the subsequent procedure does not indicate this. That the patient did not develop mediastinal involvement or succumb to the pulmonary infection, or develop a residual pulmonary complication, is fortunate. The location of the foreign body, invisible in the left main bronchus and with only a small bit protruding into the esophagus, is unusual. The rapidity with which the esophageal end of the fistula closed is of interest.

SUMMARY

An unusual case of esophagobronchial fistula, resulting from the lodging of a bone in the esophagus and subsequent penetration of the left main bronchus, is reported and briefly discussed.

REPORT ON MEDICAL PROGRESS

DERMATOLOGY

PERRY C. BAIRD, JR., M.D.

BOSTON

ROSACEA AND ITS ASSOCIATED OCULAR DISEASES

IN THE entire field of dermatology, there is no disease that provides a more gratifying opportunity for service to the patient than does rosacea. The disfiguring effects of the disease, combined with the frequently quite serious eye complications, comprise a formidable enemy to health and happiness. Though easily diagnosed in classic phases, rosacea is commonly missed in its mild and atypical varieties. Patients with this disease, even when they have suffered from it for years, usually respond with remarkable speed to modern treatment. The therapeutic miracle of a simple sulfur ointment applied locally to the face is nowadays a frequent source of astonishment to patients with rosacea who have been through years of ineffectual study and treatment by means of general medical studies, skin tests, constipation regimens, elimination diets and other procedures.

The term "acne" in association with the disease rosacea is deservedly losing its place. The two diseases acne vulgaris and rosacea bear certain indisputable similarities, but they present important differences and should be differentiated sharply in name as well as in treatment and interpretation. Both diseases are commonly associated with severe degrees of seborrheic dermatitis of the scalp, and both present a pustular element strongly suggesting infection of the skin externally. In acne there is probably an important glandular factor, but in rosacea there is less clear-cut evidence of such a factor. Acne is seen most commonly between the ages of adolescence and twenty-six, whereas rosacea invades the age group from twenty-five to thirty-five and beyond, the average age incidence being thirty-five. In regard to treatment, a relatively simple approach is often remarkably effective in the rosacea group, whereas in true acne a more prolonged, more persistent and more complicated program of care is necessary.

The term "acne" as applied to rosacea was originally employed because of a superficial resemblance between the pustules of rosacea and those of acne vulgaris. The essential distinction between the two diseases, from a morphological point of view, lies in the fact that in acne the comedo is the starting point of the disease and is found in the center of almost every pustule. In rosacea the individual pustule is not so clearly related to the sebaceous glands.

After having studied clinically a large number of cases of rosacea, it is my strong conviction that the nature of the disease has been best described and interpreted by Norman Walker, of Edinburgh. Walker's[1] viewpoint as presented in his textbook is summarized as follows: "Rosacea is really a form of seborrheic dermatitis due to the constant irritation of the skin produced by the deposition on it of the scales and organisms associated with seborrhea." Walker deals somewhat casually with the role of alcohol, pointing out the occurrence of rosacea in teetotalers. Likewise he treats lightly the neurogenous factor, the dietary factor and the digestive factor, including achlorhydria. He seems to think that the majority of his patients "do not suffer from digestive trouble." Walker emphasizes repeatedly the necessity of recognizing and treating the factor of seborrheic dermatitis, stating that treatment on this basis results in a greatly increased recovery rate. He speaks emphatically of the need of treating, over a considerable period of time, the factor of seborrheic dermatitis of the scalp nearly always seen in rosacea.

It has been my experience in numerous cases that rosacea may be treated with spectacular success by local applications to the face and scalp, with scarcely any attention to diet or internal medication and with no attention to the neurogenous factor (except in reference to factitial considerations). In fact, it seems that one rarely sees a case of rosacea which does not respond satisfactorily to this simple approach, the therapeutic effectiveness of which must be over 90 per cent. In spite of the gratifying success of this method of treatment, the physician should analyze every case in search for any nervous or gastrointestinal or other recognized etiologic factors that may be present.

Rosacea is a disease characterized by an inflammatory disturbance of the skin, distributed chiefly over the scalp, forehead, nose, cheeks and chin. The findings in the scalp are usually those of extreme scaling, with or without erythema. The appear-

ance of the face is characterized by erythema, papules and pustules. Comedos may be present but do not typify the disease. Increased oiliness may be present but is not constantly so.

Rosacea is frequently associated with blepharitis, conjunctivitis, keratitis and corneal ulcers. The blepharitis is usually a dry, scaly, chronic disturbance, occasionally associated with erythema and edema. The other three ocular manifestations are more commonly acute and recurrent. The corneal ulcers may lead to vascularization of the cornea and scarring, and to serious impairment of vision.

One of the outstanding features of the treatment of rosacea, as I see it, is its potent effect in preventing recurrence of conjunctivitis, keratitis and corneal ulcers. The ophthalmologist is best qualified to treat the acute attacks referable to the eye itself. The dermatological program of care has a natural place in aiding the ophthalmologist in the management of the acute attack, but it has a more decided effect in preventing recurrences of these ocular attacks. The probable explanation of the favorable effect on the eye of the treatment of rosacea lies, in my opinion, in the fact that the disease and its ocular sequelae are linked together on the basis of a common factor of infection, the numbers of which on the skin are reduced by dermatological care. In other words, rosacea, as well as the associated blepharitis, conjunctivitis, keratitis and corneal ulcers, is probably due to cutaneous infection by *Pityrosporum ovale* (bottle bacillus of Unna, spore of Malassez), by *Demodex folliculorum* or by some other organism of the nature of a fungus, yeast or perhaps a bacterium.

It is not the purpose of this paper to enter the controversy of what is the precise nature of the factor of infection in rosacea, but merely to express the opinion that the disease behaves clinically like a skin infection, and that successful treatment may be outlined accordingly.

Moore, Kile and the Engmans[2] have made recent studies of the relation between *P. ovale* and seborrheic dermatitis. They succeeded in growing this organism in pure culture from typical cases of the disease. In the scales the fungus was demonstrated in mycological preparations. Injections of a pure culture of this organism into the skins of patients already suffering from the disease produced lesions indistinguishable from seborrheic dermatitis. Inoculations of a pure culture of this fungus into normal-appearing scalps resulted in the development within a week of itching and marked scaliness at the site of the inoculation. Injections made in the same way into the skins of rabbits and guinea pigs produced a dermatitis characterized by scaling and crusting. Pathological studies of areas of experimentally produced dermatitis revealed the presence of *P. ovale*.

If rosacea is merely a manifestation of seborrheic dermatitis, and if *P. ovale* is its cause, one may justifiably speculate in regard to a possible etiologic relation between this organism and rosacea.

Ayres and Anderson[3, 4] have studied an association between the presence in the skin of *D. folliculorum* and the occurrence of rosacea. Though admitting the frequent presence of *D. folliculorum* in normal skins, and hence realizing the impossibility of fulfilling Koch's postulates, they believed, nevertheless, that this organism represented "an important etiologic factor in certain cases of rosacea." They found moderate to large numbers of *D. folliculorum* in superficial pustules and follicular scales in 50 out of 63 cases examined. All but 3 of their patients in a series of 69 improved or recovered completely following the use of strong antiparasitic ointments and the daily use of soap and water. Ayres and Anderson obtained these excellent results in their first series by the use of an ointment containing Betanaphthol, sulfur and balsam of Peru. In a larger series, later, they obtained equally good results with Danish ointment.

The above lines of observation and reasoning indicate that rosacea is due to infection of the skin. It may, however, be due to lowered resistance to a type of skin infection to which we are all exposed. This lowering of resistance is probably governed by many and varied influences, such as focal infection, lowered gastric acidity, excess of carbohydrates in the diet, nervous and emotional states and other mechanisms which have been studied intimately by Stokes[5, 6] and his associates. Brilliant and extensive studies of this disease have been made by them, and they have given us much to think about in reference to interpretation and management. The limited scope of this paper does not permit a complete review of Stokes's outstanding contributions. However, a scholarly knowledge of the subject and the ability to treat the disease with the utmost effectiveness would require more than passing familiarity with his work.

Stokes and Beerman[6] have taken a viewpoint of strong skepticism in reference to the work of Ayres and Anderson concerning rosacea and *D. folliculorum*. They repeated this work and could not substantiate the laboratory data, but found sulfur to be of value in treatment. They obtained much improved results, however, by combining sulfur with constitutional treatment.

Regardless of the theoretical considerations and the arguments of these two schools of thought, a spectacularly successful program of care can be organized purely on the basis of rosacea conceived as a type of infection primarily in the scalp but capable of invading eyebrows, eyelids, conjunctiva

and cornea, as well as the central portion of the face and cheeks.

Among the best pharmaceutical preparations for local application to the face and scalp are sulfur, ammoniated mercury and yellow oxide of mercury. When used on the scalp these chemicals seem to work better if combined with salicyclic acid and Liquor Carbonis Detergens. When used on the face, sulfur and ammoniated mercury both seem to behave better if combined with zinc oxide. Yellow oxide of mercury, corrosive sublimate and boric acid are particularly well suited for the eyelids, and one of these three should be so employed as a matter of routine in all cases of rosacea associated with ocular complications. All formulas of value in treating the scalp are generally of equal effectiveness in treating the eyebrows, but are often too strong, if not dangerous, for eyelids, because of proximity to the eyes. All formulas useful in treating blepharitis seem to be of value in treating the eyebrows.

A program of treatment suited to the average case of rosacea and its ocular complications may be outlined according to the scheme indicated below. A high percentage of cases tolerate this program, and about 80 per cent or more recover under it. Patients not tolerating sulfur usually tolerate ammoniated mercury and recover with similar speed. A sample program may be described as follows:

1. The most important step of all is a local application to the face. Sulfur is generally regarded as the best. Walker prefers sulfur lotions, but my experience is that sulfur ointments seem to be very much more effective.* Ayres and Anderson recommend Danish ointment, which is a valuable remedy but is probably more apt to produce dermatitis than are other sulfur mixtures. The following 10 per cent sulfur formula is usually successful:

℞	Sulfur (precipitated)	3.00
	Zinc oxide ointment (U.S.P.)	
	Aquaphor (Duke) āā ad	30.00

This should be applied each evening to the forehead, cheeks, nose and chin, or merely to the affected areas. In some cases weaker concentrations (5 per cent) are tolerated better, whereas in others it is necessary to employ concentrations as high as 20 or 40 per cent.

If sulfur is not well tolerated, it may be replaced in the same formula with ammoniated mercury in concentration of 5 to 20 per cent. Mercury in this form is very effective.

If the patient tolerates neither sulfur nor ammoniated mercury, other antiseptic formulas can be attempted, but less favorable results may be anticipated. Metaphen (in oil), betanaphthol, Balsam of Peru and yellow oxide of mercury are substitutes worth trying.

2. Most dermatologists agree that treatment of the scalp is an essential part of the plan of management in rosacea. At the start an ointment should be used, along with frequent shampoos. Later the ointment may be applied less frequently and gradually replaced by a suitable scalp lotion.

A good scalp ointment is the following formula, devised by Foerster, of Milwaukee:

℞	Salicyclic acid	2.00
	Sulfur (precipitated)	2.00
	Solution of coal tar (N.F.)	8.00
	Aquaphor (Duke)	
	Lanolin āā ad	60.00

An excellent scalp lotion has been developed by Udo Wile, of Ann Arbor, Michigan:

℞	Mercury bichloride	0.26
	Chloral hydrate	24.00
	Spirit of formic acid	20.00
	Castor oil	4.00
	Menthol	4.00
	Alcohol (80 per cent) ad	360.00

3. Hygienic instructions are generally given in regard to maintenance of cleanliness of combs, brushes, towels, washcloths and pillow slips. (These hygienic measures are logical and seemingly helpful, but my experience is that they are not absolutely essential.)

4. The hands should be kept strictly away from the face. The habit of leaning on the fist or palm of the hand is forbidden. The impulse to scratch, rub, pick at or squeeze lesions is forbidden. These habits may lead to severe factitial scarring, and they may interfere seriously with the patient's power of recovery.

5. Other measures of value include oral administration of calcium, hydrochloric acid and vitamin D. Calcium may be taken in the form of the gluconate, a teaspoonful to a half-glass of water thirty minutes before each meal and at bedtime. Dilute hydrochloric acid (U.S.P.) should be taken in doses of 20 to 60 drops in fruit juice or milk, sucked through a glass straw during meals. The effective dose of vitamin D varies between 8000 and 100,000 U.S.P. units. For best results, calcium, hydrochloric acid and vitamin D should all be taken at the same time, thus providing intensive calcium therapy. Both hydrochloric acid and vitamin D have an effect in improving the absorption of calcium. In addition, the administra-

*The use of ointments in treating rosacea is a situation quite in contrast with that encountered in ordinary acne, wherein all greasy preparations must be used in a restricted sense or else avoided entirely.

tion of hydrochloric acid tends to correct the hypochlorhydria often seen in rosacea and other skin diseases. Occasionally, vitamin D alone seems to be very effective treatment.

6. The diet should be restricted in carbohydrates. Excessive eating should be avoided, and food should be masticated slowly. Abstinence from vasomotor foods, drugs and gastric irritants is advised. In regard to the intake of tea, coffee, alcohol and condiments, moderation or abstinence is usually advisable.

Verrucae

Warts, though externally located, generally superficial and readily accessible, can be an exasperating disease from the standpoint of both doctor and patient. At a recent meeting of the Academy of Dermatology in Philadelphia, about fifty physicians met in an informal group and discussed warts as a therapeutic problem, and seemed to be in agreement that in many cases the problem is a difficult matter. This resistant group of cases will tax to the limit the therapeutic resourcefulness of even the most versatile specialists.

On the other hand, warts may be regarded as the easiest of diseases to treat. Often enough they disappear spontaneously. Bloch[11] was able to cure 44 per cent of cases of common warts and 88 per cent of cases of juvenile warts by suggestion therapy alone. It is certainly true that a high percentage of all types of warts will respond in a predictable period of time to all methods of treatment now in use, especially x-ray therapy and surgical diathermy. One can say with assurance that there is an answer to the wart problem in every case; patience and persistence and repeated application of the best measures will invariably conquer the disease. At the beginning, the patient should be warned of the limitations of our methods of treatment, so that he will not give up in despair in case first attempts fail; yet he should be reassured quite emphatically, so that he will benefit fully from the psychotherapeutic value of the treatment employed.

The types of warts most commonly encountered in practice include verruca vulgaris, verruca plana juvenilis and verruca plantaris. All these varieties are considered to be due to a virus infection, and all respond to the standard forms of treatment with a satisfactory degree of promptness and completeness.

Though warts are due to a transmissible type of infection, the source of the infection causing them in any given case is usually impossible to trace because of the extraordinary latent period, which may be as long as twelve to twenty months.[10]

Verruca vulgaris may occur anywhere on the skin. The appearance is so characteristic and so familiar as scarcely to merit description. In children, particularly between the ages of twelve and fifteen, these warts may be quite numerous, sometimes exceeding a hundred or more. In adults, warts are as a rule less common and much less numerous. The tongue, eyelids, scalp, penis, hands and all other areas of skin may be involved.

Verrucae planae juveniles, otherwise known as flat or juvenile warts, are flesh-colored, slightly raised, flat-topped, rounded or angular papular lesions. They are generally multiple, often quite numerous and are commonly distributed on the face, neck, hands, wrists and knees. They tend to spread in a linear manner along lines of scratch.

Verruca plantaris occurs most commonly at the points of pressure of the ball of the foot. Usually the plantar wart presents a soft, light-brownish core and a hard, calloused rim. This type of wart serves to increase friction at points of pressure, and increases the tendency to callus formation to a considerable extent. It is not uncommon to find a rather small plantar wart surrounded by a very large zone of callous reaction. Plantar warts are undoubtedly contracted from walking on surfaces previously trod by people carrying the disease. Avoidance of the habit of walking barefooted in bedroom and bathroom will prevent many cases. The incidence in gymnasiums and schools can be reduced by careful examination of the feet and appropriate treatment of infected cases, forbidding the patients to use showers and swimming pools until a certificate of cure has been obtained.

There is no prophylactic treatment for warts. The best that can be offered is treatment of each wart as it appears.

The treatment may be directed along many different lines, including internal remedies, injections, local applications, electrodesiccation and radium and x-ray therapy. The virus is probably not limited to the warty area, but undoubtedly inhabits surrounding areas of skin. If a wart is removed by surgery or surgical diathermy, the site may easily be invaded again from the surrounding skin. Autoinoculation in this way takes place more commonly after ordinary surgical procedure than after electrodesiccation. The use of a good antiseptic such as iodine before and after operation tends to reduce recurrences.

As previously mentioned, Bloch advocated treatment by suggestion, and thus cured 88 per cent of juvenile warts and 44 per cent of common warts. Since he succeeded in proving beyond question that warts may be cured by the power of suggestion, he thus provided an explanation for the success

of methods of therapy in common use among the laity, such as rubbing the wart with a piece of raw meat and burying the meat under an apple tree on a moonlight night, rubbing the wart with a cut apple licked with the tongue, and conjuring among Negro healers.

This work by Bloch represents a startling contribution. He is an able physician whose integrity is not to be doubted. Space does not permit a complete review of his work, but those who doubt the feasibility of his conclusions are referred to his original paper in German. His experiments were carefully controlled, and they are very convincing.

Bloch's usual method of suggestion therapy consisted of the following procedure: The eyes of the patient are bound and he sits with his hands on an electrically controlled vibrating machine. No electrical currents of any nature enter the body from this apparatus, and possibly the chief power of suggestion lies in the noise made by the machine. A drawing is made of the parts involved and the locations of all warts are marked on it. The warts are painted with a supposedly inert coloring fluid such as saffron, methylene blue or eosin. The blindfold is then removed. It is impressed on the patient that so long as any trace of color is still visible the warts are not to be touched, and that he must be careful about this in washing himself each day. He is then assured that the warts are quite certain to disappear. Other methods of suggestion therapy were employed in occasional cases, and sometimes Bloch relied chiefly on verbal suggestion.

Following Bloch's suggestion treatments, hemorrhages into warts often occurred, and complete disappearance without scarring would then take place in four to eight weeks. Many cases recovered following suggestion therapy after having failed to respond to x-ray, cautery, mercury, arsenic, acids and other ordinary methods. A number of cases successfully treated by suggestion were of many years' duration, and the response to treatment was so prompt as to exclude the possibility of spontaneous recovery.

A phenomenon commonly encountered in treating large numbers of warts consists in the disappearance of all warts after the treatment of only a few. This may be a phenomenon of suggestion therapy, or else the destruction of a few warts may release into the blood stream protein substances that stimulate immunity.

Protiodide of mercury in doses of ⅙ gr., three times a day, and magnesium sulfate in doses of 10 to 30 gr., three times a day, are among the most popular of the internal remedies. They are usually of a low grade of efficacy. Perhaps they exert benefit by power of suggestion, as may also be the case with injections and other forms of therapy.

Bismuth employed as an intramuscular injection is used frequently in the treatment of warts. Without doubt, it is efficacious in a modest percentage of cases of common, flat or plantar warts. Practically all forms of antisyphilitic therapy, including mercury, neoarsphenamine and sulfarsphenamine, have been reported to be of value.

Electrodesiccation under novocain anesthesia is probably the most effective of all types of treatment for warts. If it is applied skillfully, excellent cosmetic results may be obtained. If warts treated by this method tend to recur, they should be promptly retreated by the same technic. Recurrences following a second treatment are very rare.

X-ray therapy in the treatment of common and plantar warts is usually employed in a dosage of 300 to 1500 r (a few daring therapists employ 2000 to 3000 r in a single dose). Before treatment, the wart is shaved down and shielded with leaded rubber. Within one to three weeks the wart may become a little hypersensitive and slight erythema may be detectable. Disappearance usually takes place within four to eight weeks. If the wart fails to respond, a second treatment, with a dosage dependent on the initial dose and the reaction to it and given by the same technic, is considered permissible. If the second treatment fails, further x-ray therapy is usually contraindicated, particularly if large doses were previously employed. The percentage of cures from x-ray therapy may be increased by the use of two or three applications of bichloracetic acid during the first four weeks after x-radiation.

The results of radium therapy are about the same as those obtained by x-ray, and the principle of treatment is essentially the same. X-ray is used much more commonly and has tended to supplant radium.

It is appropriate to give a note of warning in regard to the x-ray or radium therapy of plantar warts. The chief contraindication to either form of radiation therapy is a history of previous use of either, even when the interval has been as long as eight or ten years. The serious accidents occasionally seen in the treatment of plantar warts by x-ray are encountered almost invariably when such treatment has been repeated two or more times. No radiation therapy should be given until an accurate record of previous therapy has been made available. Good judgment then employed in regard to total dosage should prevent the disasters that sometimes occur. The factors which enter the estimation of dosage include age of patient, thickness of skin and depth of pigmentation,

degree to which wart is trimmed, and amount of previous dosage as well as reaction to it. Even after using the finest judgment, idiosyncrasy cannot be avoided.

In the treatment of flat warts, simple local applications, such as ammoniated mercury, salicyclic acid, sulfur and resorcin, are often efficacious. Mercury protiodide given by mouth is in common use, and bismuth injections represent a valuable form of therapy. One of the most effective methods consists of touching each visible wart lightly with a desiccating needle, repeating the procedure about once weekly, and following each treatment with a small dose of x-ray (35 to 75 r) to the affected areas — not to each wart.

In the treatment of warts the dermatologist occasionally encounters patients who refuse or should not have x-ray or radium therapy and who, for reasons of convenience, object to a minor operation with surgical diathermy. These cases are best handled by the use of acids, such as bichloracetic. If this is applied skillfully, large numbers of warts may be treated painlessly and successfully in a few visits. This method, however, gives a lower percentage of cures than does x-ray therapy or surgical diathermy, and the degree of destruction is more difficult to control; keloidal scars occasionally result.

Alopecia Areata

Alopecia areata is a disease that bears an ominous prognosis, not fully deserved. This bad reputation is derived from those rather exceptional cases which fail to respond to any form of treatment, and go from bad to worse despite heroic efforts on the part of both doctor and patient. It is far closer to the truth to state that most patients recover either spontaneously without treatment or coincidentally with treatment. Every dermatologist probably sees in his career scores of cases with complete recovery while under observation.

In regard to prognosis, Walker and Percival[1] stated: "The prognosis is good. If a patient is under forty, the physician may confidently predict recovery. The exceptions are so few that he may cheerfully take the risk of them. . . . Even in those cases where every hair on the body has disappeared, dogged perseverance in treatment is usually rewarded."

As a rule, the diagnosis of alopecia areata is readily established on the basis of simple inspection of the skin. The characteristic appearance is that of a sharply circumscribed patch of complete alopecia, associated with no inflammatory changes. The bald area is smooth and glossy, and essentially normal except for the absence of hairs. At the margin of these patches there are loose, broken-off hairs, which show on removal an attenuation of the bulb, resulting in an appearance which has given rise to the term "exclamation-point hair." These patches may coalesce to form a wide variety of patterns, and may extend until every hair on the body has disappeared.

Rarely, alopecia areata involves the bearded area of the face and spares the scalp. In these cases the diagnosis is not so readily established and is often missed.

Alopecia areata must be carefully distinguished from the patchy alopecia of early syphilis, ringworm, lupus erythematosus, alopecia seborrhoeica of the patchy type and pseudopelade. The differentiation is easy except in the case of syphilis. Routine Wassermann, Hinton and Kahn tests are indicated. All three should be done.

The true etiology of alopecia areata is unknown. There is evidence of a transmissible factor of infection. Bowen[7] reported an epidemic in a girls' home where, after the introduction of a case, 63 out of 69 girls were affected. Two or more cases may occur in a single family. Thin, Sabouraud and many other workers thought they were able to isolate micro-organisms of etiologic importance. The most convincing evidence regarding communicability, however, comes from the numerous authentic reports of epidemics.[7–9] Of interest are the toxic and neuropathic theories of etiology.

Every case of alopecia areata should undergo the traditional studies, including general medical examination, routine blood and urine tests, search for foci of infection and a determination of the basal metabolism. The basal metabolic rate is often lowered, and if so, thyroid medication should be given as a part of the general program of care. In other respects, also, the treatment should be guided by and based on general medical investigations.

In many cases the outstanding clinical findings are evidences of severe nervous and emotional stress and strain. Often these nervous and emotional components are beyond the influence of ordinary medical care. Recovery may take place under treatment by physical and chemical agents, despite the absence or failure of psychotherapy.

In my experience, most of the cases with only one to three or four patches of alopecia areata of the scalp clear up completely within three months on a program including general medical care, all the vitamins in large doses, a diet high in sulfur and other minerals but restricted in carbohydrates, daily applications of an ointment containing oil of cade, sulfur and salicylic acid, and ultra-violet light in large doses administered every week or two.

A valuable prescription is the following:

℞	Oil of cade		12.00
	Sulfur (precipitated)		6.00
	Salicylic acid		3.00
	Rose water ointment	ad	60.00

The above ointment may be applied daily to the bald areas.

Cases of alopecia areata of more widespread distribution are as a rule more difficult to treat, more unpredictable and more given to recurrences.

Other recommended forms of treatment include iron, arsenic, pilocarpin by mouth and stimulating and antiparasitic local applications, such as resorcin, turpentine, cantharides, phenol, tar, iodine, sulfur and mercurials.

An excellent scalp lotion for use in alopecia areata is the following:

℞	Phenol		4.00
	Tincture of cantharides		15.00
	Castor oil		4.00
	Alcohol (95 per cent)	ad	120.00

This may be applied with friction to the affected areas once or twice daily.

Alopecia Seborrhoeica

The common seborrheic type of alopecia is a prevalent source of anxiety and distress to large numbers of men and to a lesser number of women. The response to treatment in young women is usually gratifying, but no reputable dermatologist will make extravagant claims as to what may be accomplished in men of any age. In treating the disorder in men, there is general agreement that much can be done to retard the rate of hair loss, particularly if it is associated with considerable evidence of seborrheic dermatitis. Men showing alopecia without anything more than a slight detectable scaling type of seborrheic dermatitis probably have important etiologic influences of the nature of nervous and glandular disorders. It is quite clear that, at the present time, the methods of ameliorating the neurogenous and endocrinological factors are not sufficiently effective to permit any convincing accomplishments so far as hair growth is concerned. Cases showing the common frontal, bitemporal and vertical types of baldness with little or no evidence of seborrheic dermatitis may be interpreted as having the idiopathic type, and they have a less favorable prognosis than those with the clear-cut seborrheic type.

In spite of the differences between the idiopathic and the seborrheic types of alopecia, the treatment of both is about the same, and is based on the technic and principle involved in the treatment of seborrheic dermatitis of the scalp. The lotions and ointments useful in treating seborrheic dermatitis are also useful in treating cases of alopecia of the common type (see section on rosacea). There is evidence that vitamin A is of value to hair growth and that vitamin D may be effective in treating seborrheic dermatitis. Hence, any rich source of these vitamins, such as cod-liver oil or haliver oil, has a theoretical as well as a time-honored place in the general program of care. The diet should be rich in sulfur, as provided by eggs and meat, and rich in all other minerals, as provided by milk. Fruits, vegetables, meat, eggs and milk should be taken in liberal amounts, but moderate reduction of sweet, starchy and fatty foods is indicated. Instructions regarding cleanliness of combs, brushes and hatbands, and barber-shop precautions, are given. Ultra-violet light therapy every week or two in sufficient amounts to sunburn the scalp seems to hasten the disappearance of inflammatory changes, occasionally stimulates slight degrees of regrowth of hair in men, and seems to be immensely effective in stimulating regrowth in young women.

The use of scalp exercises and massage has a place in the management of the common type of baldness, but is not recommended until all evidence of inflammatory disturbances has been eradicated.

In regard to the part played by covering the scalp with a hat, writers have called attention to the following effects: exclusion of air and sunshine, pressure on and partial occlusion of the vascular network supplying the scalp and hypersecretion of sweat. These effects represent only one part of the general etiologic interplay, but in spite of the reasonableness of considering hat-wearing a cause of baldness, it must be acknowledged that discarding the hat seems to have no very clear-cut influence on hair growth.

Recent work concerning the use of the male sex hormone in treating various types of genital hypoplasia proves beyond doubt the ability of this hormone to stimulate hair growth in regions such as the face, axilla, chest, pubis and extremities.[12] It is well known that in patients with Fröhlich's syndrome, eunuchs and other types of hypogonadism there may be abundant growth of hair on the head with scant growth on the bearded areas of the face, chest and pubis. It is a well-established fact that extreme degrees of the common type of hair loss may be associated with abundant hair growth on the face, chest and pubis. One of my patients observed sudden onset of baldness of the scalp coincident with great increase of hair growth on the chest and pubic area. These observations would lead one to conclude that the mechanism of hair growth on the scalp is regulated by influences quite different from those at work in other

regions of the body. Certainly the common type of alopecia is usually associated with ample evidence of sufficient secretion of the male sex hormone. In myxedema, the hair of the head and elsewhere is dry, brittle and sparse. Its growth is retarded and it tends to fall out. Haircuts are necessary only at very long intervals. The scalp is dry and scaly.[13]

These thoughts would lead one to suspect that hair loss of the common type may have, at least in part, a glandular basis. Perhaps the pattern is an increased output of male sex hormone and a reduced output of thyroxin. At any rate, the glandular mechanism remains unknown and no therapy on this basis is available. Administered to the skin in ointment form, the male sex hormone is absorbed into the blood stream and exerts a general physiologic action, along with intensive action on the tissues locally. I have employed testosterone proprionate ointment locally to the scalp in several cases of the common type of alopecia after clearing up the element of seborrheic dermatitis. In these cases, the total period of treatment has not been sufficient to warrant conclusions as to its efficacy. No effects in either retarding or accelerating hair growth have been observed. The use of testosterone proprionate is merely suggested as an endocrine approach deserving further clinical investigation.

270 Commonwealth Avenue.

References

1. Walker, N., and Percival, G. H.: *An Introduction to Dermatology.* Tenth edition. 407 pp. Baltimore: Williams & Wilkins Co., 1939. P. 225.
2. Moore, M.; Kile, R. L.; Engman, M. F., Jr., and Engman, M. F.: Pityrosporum ovale (bottle bacillus of Unna, spore of Malassez): cultivation and possible role in seborrheic dermatitis. *Arch. Dermat. & Syph.* 33:457-472, 1936.
3. Ayres, S., Jr., and Anderson, N. P.: *Demodex folliculorum:* its role in the etiology of acne rosacea. *Arch. Dermat. & Syph.* 25:89-98, 1932.
4. *Idem:* Acne rosacea: response to local treatment for Demodex folliculorum. *J. A. M. A.* 100:645-647, 1933.
5. Stokes, J. H., and Beerman, H.: Effect on the skin of emotional and nervous states. IV. The rosacea complex: a reappraisal, with special reference to the constitutional background and the rationale of treatment. *Arch. Dermat. & Syph.* 26:478-494, 1932.
6. Beerman, H., and Stokes, J. H.: Rosacea complex and *Demodex folliculorum. Arch Dermat. & Syph.* 29:874-884, 1934.
7. Bowen, J. T.: Two epidemics of alopecia areata in an asylum for girls. *J. Cutan. & Genito-Urin. Dis.* 17:399-404, 1899.
8. Fox, T. C.: On a small epidemic of an areate alopecia. *Brit. J. Dermat.* 25:51-56, 1913.
9. Davis, H.: Epidemic Alopecia areata. *Brit. J. Dermat.* 26:207-210, 1914.
10. Templeton, H. J.: Long incubation period of warts. *Arch. Dermat. & Syph.* 32:102, 1935.
11. Bloch, B.: Ueber die Hielung der Warzen durch Suggestion. *Klin. Wchnschr.* 6:2271-2275, 2320-2325, 1927.
12. Turner, H. H.: The clinical use of synthetic male sex hormone. *Endocrinology* 24:763-773, 1939.
13. Means, J. H.: *The Thyroid and Its Diseases: Being an account based in large measure on the experience gained in the thyroid clinic of the Massachusetts General Hospital.* 602 pp. Philadelphia: J. B. Lippincott Co., 1937. P. 214.

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

ANTEMORTEM AND POSTMORTEM RECORDS AS USED IN WEEKLY CLINICOPATHOLOGICAL EXERCISES

FOUNDED BY RICHARD C. CABOT

TRACY B. MALLORY, M.D., *Editor*

CASE 26121

PRESENTATION OF CASE

A seventy-four-year-old housewife was admitted to the hospital complaining of jaundice.

The patient had enjoyed good health until eleven months before admission when she had developed painless jaundice, clay-colored stools, dark urine and intense pruritus. These symptoms fluctuated in intensity but never completely disappeared. A few normally dark stools were passed, but at no time did she experience any real nausea, vomiting, pain, chills or known fever.

Throughout this eleven-month period she had a good appetite, ate well of fruits, vegetables, milk, eggs and carbohydrates. Her diet consisted of little meat, however, and she eschewed fats and butter on her doctor's orders. She had lost 40 pounds, and weighed only 128 pounds on entry.

For two months before admission she was mildly constipated, receiving relief by taking cathartics (Epsom salts) every third day. Two weeks before entry she had a transient attack of indigestion and regurgitated a small amount of recently ingested food, but there were no other symptoms.

The patient had been under constant medical attention during the present illness. She had been placed in an outside hospital for a short interval, nine months before admission, where all studies done were reported as "negative." No special diagnostic procedures were performed since that time. She remained at home cooking and caring for one of her seven children until she was admitted.

The remaining family, marital and past histories were non-contributory.

Physical examination revealed a remarkably well-preserved, cheerful, co-operative woman, who had dry jaundiced skin. She showed evidence of weight loss, but was in no discomfort. The peripheral blood vessels were "markedly sclerotic." The apex of the heart was percussed at the midclavicular line in the fifth interspace. A precordial systolic murmur was best heard at the apex, and the blood pressure was 170 systolic, 82 diastolic. The lungs were normal. The abdomen was soft and lax, without evidence of ascites. The liver edge was not felt. A questionable, ill-defined, non-tender mass was palpated in the right upper quadrant. The remainder of the physical examination was essentially negative.

The temperature, pulse, and respirations were normal.

Examination of the blood showed a red-cell count of 4,130,000 with 11.5 gm. of hemoglobin (photoelectric-cell technic), and a white-cell count of 9100 with 81 per cent polymorphonuclears; the stained smear was negative. The urine showed a specific gravity of 1.008, with no albumin, sugar or bile. The sediment contained a rare red blood cell, 8 white blood cells and 20 epithelial cells per high-power field. The icteric index was 60, and the van den Bergh 8.8 mg. per 100 cc., with a biphasic reaction. The serum nonprotein nitrogen was 23 mg. per 100 cc. Four stool examinations were both guaiac and bile negative.

Roentgenograms of the gall bladder (Graham method) showed that it was not visible after the patient took the dye. The interpretation was rendered difficult by the presence of gas shadows in the large bowel, but the test was believed to be positive.

On the fifth hospital day an operation was performed.

DIFFERENTIAL DIAGNOSIS

DR HENRY H. FAXON: The history states that the urine showed no bile. Is that correct?

DR. TRACY B. MALLORY: Two urine examinations were bile negative.

DR. FAXON: That is confusing in the light of the other laboratory data.

The story comes down to that of a seventy-four-year-old woman in whom jaundice was the outstanding, and only complaint that we have to consider seriously. The nonprotein nitrogen, blood count and so forth were not remarkable. So far as the gastrointestinal tract goes, there are only two minor points mentioned. One is the fact that on one occasion she regurgitated food. It does not say whether there was any blood in the vomitus, nor whether it contained bile. The other reference is to the large bowel; it was noted she had increasing constipation. Some increase in constipation might be expected in the absence of bile in the intestinal tract. It is of significance that the stool examinations were guaiac negative.

It is important to establish whether or not hers was a true obstructive jaundice, but the presence of an increased icteric index, a positive van den Bergh test and clay-colored stools seems to me to establish this fact definitely.

What then are the factors we might consider that could have caused the jaundice of which she complained? I do not believe it is a jaundice of the

hemolytic type, because of the age of the patient and the absence of any history or findings of infection. There is another possibility — that of cirrhosis of the liver or intrahepatic disease. The liver was not enlarged, no spleen was felt and she had no ascites; hence it would seem that this possibility could likewise be excluded. The third possibility is that of gallstones. Gallstones, as an incidental finding, are very common in elderly people at postmortem examination. However, it is my impression that it is not common to find silent gallstones giving rise to abnormal signs without some antecedent story of at least mild biliary complaints. It would be unusual, but not impossible, without an antecedent story to find a patient with a stone in the common duct. The gallbladder x-ray studies are of very little help to us. Apparently the Graham test was positive, but the report is evasive in stating that the interpretation was rendered difficult by the presence of a gas shadow. Another dubious point in relation to the gall bladder that leaves us in some doubt is that the physical examination states that a questionable ill-defined mass was palpated. In a woman who had lost so much weight and with an abdomen noted as soft and lax, I should have expected that were she to have an enlarged gall bladder the examiner would have made it out without the doubt that is here expressed.

The last possibility as a cause for the jaundice is cancer, and with this consideration one is faced with the problem of whether or not it was a metastatic or primary manifestation. I think it is unlikely, with the story of no enlargement of the liver, that the steady increase in jaundice would arise from metastatic disease unless the metastasis happened to be in such a strategic position that it blocked the common bile duct. Primary cancer in the region of the bile duct, the head of the pancreas or the ampulla of the duodenum could cause biliary obstruction and jaundice, and it seems to me that the absence of pain and the progressive nature of the jaundice — although there were intermittent spells where she did get some bile through into the large bowel — indicate that she may well have had cancer of the head of the pancreas or common bile duct. If you look at the story as a whole the course is a steadily progressive affair, despite the transient periods of improvement. To be able to say whether the primary cancer was in the head of the pancreas or in the bile ducts, is almost impossible. If I assume that the questionable mass was an enlarged gall bladder, cancer would fit in with the old dictum of Courvoisier's law; namely, that the development of jaundice with cancer gives a large gall bladder, whereas if stones are responsible the gall bladder is not distended.

I have deliberately and perhaps very unwisely skipped over the feature of absence of bile in the urine. I rather upbraid myself for having asked at the opening of the discussion if this finding was correct, for I was sure there was going to be some bile in the urine. It is confusing to find that at two examinations this was not present. I suspect that the surgeon when he explored this case was in some doubt as to the nature of the lesion. It is my impression he feared he might encounter cancer but hoped he would find a solitary stone to explain the jaundice. My first diagnosis is cancer of the head of the pancreas or bile ducts, and my second choice, an obstructive gallstone.

DR. MALLORY: Does anyone else care to hazard an opinion?

DR. FAXON: Would someone like to explain to me the absence of bile in the urine, in the presence of the story and chemical findings that are given here.

DR. JOHN STEWART: My guess would be that it was an erroneous observation.

DR. FAXON: One determination might be erroneous, but the two reports bother me.

DR. STEWART: The foam test is certainly open to differences in interpretation by various observers.

DR. MALLORY: It may have been observed by artificial light.

DR. J. H. MEANS: I might mention a case that bears out what Dr. Faxon has said about intermittent obstruction in cancer of the head of the pancreas. We had a patient who had a clinical story of stone, with intermittent jaundice. He got over it and then had a recurrence of the jaundice. He was young and we thought that cancer was out of the question. He was explored, and cancer of the head of the pancreas was found.

DR. LANGDON PARSONS: In spite of the fact that this patient had lost 40 pounds, she felt perfectly well and was admitted to the hospital simply for relief of the itching from her jaundice of eleven months' duration. In our line of reasoning we followed much the same train of thought that Dr. Faxon has. I was helped enormously by Dr. Stewart, who had made observations, on the basis of vitamin K and liver-function studies, relative to determining whether we were dealing with carcinoma of the head of the pancreas or with obstructing gallstones. I think he might be asked to comment.

DR. STEWART: It may be of interest to tell you a little about the prothrombin values in this case, as determined by the method of Warner, Brink-

hous and Smith. A level such as this woman had when she entered, namely 72 per cent of normal, is rarely or never seen in jaundice due to carcinomatous obstruction, presumably due to the fact that as a rule with obstruction due to carcinoma there is little or no escape of bile salts into the gastrointestinal tract, hence no decrease in absorption of vitamin K. This determination is definitely of some help in diagnosis, particularly when it is a question of deciding between carcinomatous obstruction of the bile duct or obstruction due to stone. Patients with obstruction due to stone show levels in general from 15 to 20 per cent higher than do patients with obstruction due to carcinoma. On the other hand, the determination is of no particular value in differentiating intrahepatic disease, so-called catarrhal jaundice, from jaundice due to stone in the common duct, but in this particular case the finding of 72 per cent, coupled with the other elements in the clinical picture, made us more optimistic about the diagnosis than Dr. Faxon was.

Preoperative Diagnoses

Choledocholithiasis.
Carcinoma of gall bladder?

Dr. Faxon's Diagnosis

Carcinoma obstructing the common duct?
Choledocholithiasis?

Anatomical Diagnosis

Choledocholithiasis.

Dr. Parsons: She had a small sclerotic gall bladder, not much bigger than my thumb, and a dilated common duct with a stone measuring 3 cm. in diameter impacted in the duct at the papilla. Nothing was done to the gall bladder. The common duct was drained, and she made a perfectly good recovery.

Pathological Discussion

Dr. Mallory: I can add nothing to what has already been said. The essential thing in any case of this sort is not to allow one's pessimism to prevent exploration.

CASE 26122

Presentation of Case

A sixty-nine-year-old unmarried woman was admitted to the hospital complaining of indigestion.

She had first been seen by a physician eleven days before entry at the request of her landlady and much against the patient's will. At this time the patient was quite weak and unco-operative so that no well-defined story of her illness could be obtained. As near as could be determined she had been suffering from indigestion over a period of twelve or fifteen years. The landlady stated that during the three years preceding the initial examination she had eaten most of her meals in her room and had complained bitterly about the food regardless of its quality. She had retired from teaching five months before entry and since that time had failed rapidly and hardly ever left her room. She had lost considerable weight, and for three weeks had been confined to bed because of profound weakness. For some time she had regurgitated everything ingested. At the time of her first examination the regurgitated material was coffee colored and contained small particles of undigested food; it was later discovered that she had drunk coffee a short time before. She coughed frequently and raised considerable sputum, but it was impossible to determine how long this had been going on. She insisted that there was no pain or tenderness anywhere. Bowel movements had always been more or less costive.

Physical examination by the physician who had been called showed her to be extremely emaciated, weighing about 80 pounds. She stated that her usual weight had been 125 to 130 pounds. The patient was very unco-operative, unreasonable and abusive in her language. There was well marked arcus senilis. Oral hygiene was poor. There was no engorgement or visible pulsation of the neck veins. The heart was normal in size and shape, and the sounds were of good quality; there were no murmurs. The blood pressure was 90 systolic, 65 diastolic. The breath sounds showed diminished intensity throughout both lungs, but percussion was normal and no rales were heard. The abdomen was soft and doughy. There was no tenderness, and no masses could be felt. Pulsations of the aorta were easily detected. There was no peripheral edema. The skin was dry and flabby, and there was evidence of considerable weight loss. Hospitalization was advised immediately, but the patient refused. Her condition continued unchanged during the succeeding ten days up to entry. For two or three weeks prior to her admission she was unable to take any solid food, and much of the liquid ingested was regurgitated.

Examination at entry was unsatisfactory, but the findings were essentially those of the previous examination except that many scattered coarse rales and rhonchi were audible throughout both sides of the chest. One examiner felt a mass in the umbilical region about the size of an orange, which appeared to be fixed and moderate-

ly firm but not tender. This was not corroborated by others.

The temperature was 101.0°F., the pulse 110, and the respirations 24.

Examination of the urine showed a specific gravity of 1.022, with a slight trace of albumin. The sediment contained large numbers of white blood cells and a rare red blood cell. The blood showed a red-cell count of 4,500,000, with a hemoglobin of 80 per cent. The white-cell count was 11,300 with 90 per cent polymorphonuclears. The sputum was purulent and contained tubercle bacilli. A stool examination was negative.

X-ray examination of the chest showed diffuse hazy mottled dullness involving the upper two thirds of the lung fields. Within the dullness in the left upper lobe there were several large areas of rarefaction having the appearance of cavities. A gastrointestinal series showed marked dilatation of the entire esophagus, and during the fifteen minutes of fluoroscopic observation only a trace of barium entered the stomach. This was insufficient for satisfactory examination, but there did appear to be considerable irregularity of the fundus and separation of the fundus from the dome of the diaphragm.

The patient became considerably weaker, and her condition progressively worse. Four days after entry another chest film confirmed the previous findings and in addition demonstrated round shadows at the bases. Her condition was steadily downhill; the temperature fluctuated between 97.0 and 101.0°F. and the pulse between 80 and 120. She died on the fourteenth hospital day.

Differential Diagnosis

Dr. Thomas V. Urmy: Certain aspects of this case seem rather obvious, and others less apparent. First of all, I believe that this patient must have been suffering from cerebral arteriosclerosis, as witnessed by her lack of co-operation, unreasonableness and abusive language. Her bitter complaint about food, regardless of the quality, was doubtless at least in part on this basis, and we should like to believe that this was also the reason for her refusal to seek medical aid until she had become very weak.

The patient had tubercle bacilli in her sputum, and the x-ray description of her chest is certainly consistent with advanced pulmonary tuberculosis. This diagnosis alone could well account for progressive weakness and loss of weight as well as chronic indigestion over a period of twelve to fifteen years. However, pulmonary tuberculosis would not cause the more recent symptom of regurgitation of food or, of course, the gastrointestinal x-ray findings. It becomes necessary to make a further diagnosis of a lesion of the upper gastrointestinal tract, which had produced a marked dilatation of the esophagus as well as a deformity in the region of the fundus of the stomach. Marked dilatation occurs only in long-standing lesions, such as cardiospasm, which is by all odds its commonest cause. Unfortunately, simple cardiospasm does not explain the picture in the fundus. Also, had cardiospasm been present all these years we should expect an earlier onset of regurgitation. Carcinoma of the fundus would explain the considerable irregularity seen in the x-ray films, as well as the five months' rapid downhill course and the coffee-grounds vomitus. But there are several inconsistencies. First of all, the dilatation of the esophagus was much more marked than is usually seen in carcinomatous obstruction. There was no anemia, though dehydration may make the red-cell count apparently higher than it really is. The guaiac test on the stool was negative, though it was, of course, only a single examination. Apparently there was not the increased constipation that we usually see in cancer of the stomach. Moreover, we should seriously consider tuberculosis of the stomach. It is well known that it occurs in the fundus, and that it can be a long-standing affair. It could not only explain the years of symptoms, but also the marked dilatation of the esophagus in the absence of true cardiospasm. The lack of anemia and the negative guaiac tests on the stools are probably more consistent with this diagnosis than with cancer.

Tuberculosis of the stomach may be of the sclerosing type, the ulcerative type or the hyperplastic type. The ulcerative type is the one most commonly found in the fundus. It is usually accompanied by involvement of the peritoneum and the regional lymph nodes, a fact that would not only explain the hard mass between the fundus and the diaphragm, but also give a reasonable cause for stricture of the lower end of the esophagus. This type of tuberculosis would seem to me, then, to be the most likely gastric lesion, though a hyperplastic tuberculous lesion should also be considered.

One or two other diagnoses suggest themselves. Extreme weakness and a low blood pressure with known tuberculosis raise the question of involvement of the adrenal glands. I cannot rule out this possibility, but there is insufficient clinical data for a diagnosis. The weakness, after all, could be explained on the basis of the pulmonary and gastric infections. The blood pressure, though low, is not so low as that usually seen in Addison's disease. There is no mention of pigmentation.

We may conjecture about the mass in the umbilical region felt by one examiner. It could represent tuberculosis involving lymph nodes, peritoneum or intestines, or all three.

Finally, the many scattered coarse rales and rhonchi heard at the time of admission and the round shadows at the lung bases four days later suggest the aspiration of food and subsequent aspiration pneumonia, secondary to the obstruction of the esophagus.

Clinical Diagnoses

Carcinoma of the stomach.
Pulmonary tuberculosis.

Dr. Urmy's Diagnoses

Cerebral arteriosclerosis.
Chronic pulmonary tuberculosis.
Tuberculous ulcer of the fundus of the stomach, with regional involvement of the peritoneum and lymph nodes and secondary dilatation of the esophagus.
Aspiration pneumonia.

Anatomical Diagnoses

Pulmonary tuberculosis, advanced.
Tuberculosis of bronchial lymph nodes.
Pulmonary embolism and infarction.
Bronchopneumonia.
Cardiospasm.
Pleuritis, chronic, fibrous.
Arteriosclerosis, moderate, coronary, renal and aortic.
Emaciation.
Operative scar: thyroidectomy.

Pathological Discussion

Dr. Tracy B. Mallory: An accurate and detailed history is always the most important part of any differential diagnosis, and when this is impossible to obtain, as in the case of the present irritable and unco-operative patient, one is at a grave disadvantage. Like the clinicians who took care of her in the hospital, Dr. Urmy sought an organic lesion to explain her symptoms suggesting a tuberculous ulcer whereas they had thought of carcinoma. No organic lesion of the esophagus or stomach was found, however. The esophagus was quite dilated, measuring 4 cm. in diameter, and its walls were markedly thickened, averaging about 5 mm. The cardiac orifice was constricted but could, nevertheless, be dilated. There was no ulceration or any suggestion of tumor. Sections through the wall of the esophagus showed a moderate degree of displacement of muscle fibers by connective tissue and some inflammatory infiltration. These are the usual postmortem findings of a case of cardiospasm. It is very probable that her entire fifteen years of "indigestion" was due to functional obstruction of the esophagus.

The lungs showed a very advanced, progressive tuberculosis with many foci of caseation and of calcification. A surprising finding was a fairly large pulmonary embolus, which completely obstructed the artery to the right lower lobe. All the other organs were small and atrophic in proportion to her severe emaciation.

The New England
Journal of Medicine

Formerly the
Boston Medical and Surgical Journal

Established in 1828

Owned by the Massachusetts Medical Society and Published under the Jurisdiction of the Committee on Publications

Official Organ of
The Massachusetts Medical Society
The New Hampshire Medical Society
The Vermont State Medical Society

Editorial Board

Joseph Garland, M.D. — John P. Sutherland, M.D.
William B. Breed, M.D. — Stephen Rushmore, M.D.
George R. Minot, M.D. — Hans Zinsser, M.D.
Frank H. Lahey, M.D. — Henry R. Viets, M.D.
Shields Warren, M.D. — Robert M. Green, M.D.
George L. Tobey, Jr., M.D. — Charles C. Lund, M.D.
C. Guy Lane, M.D. — John F. Fulton, M.D.
William A. Rogers, M.D. — A. Warren Stearns, M.D.
Dwight O'Hara, M.D.

Associate Editors

Thomas H. Lanman, M.D. — Donald Munro, M.D.
Henry Jackson, Jr., M.D.

Walter P. Bowers, M.D., Editor Emeritus
Robert N. Nye, M.D., Managing Editor
Clara D. Davies, Assistant Editor

Subscription Terms: $6.00 per year in advance, postage paid, for the United States; Canada, $7.04 per year; $8.52 per year for all foreign countries belonging to the Postal Union.

Material for early publication should be received not later than noon on Saturday.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to the *New England Journal of Medicine*, 8 Fenway, Boston, Massachusetts.

"OLD MEN PLANT TREES"

Attention is particularly drawn to the article by Mr. Lowell, which appears in this issue of the *Journal*. Considering the demands that are now being made on all aspirants for an opportunity to practice medicine, this sane and unemotional estimate of the educational possibilities of the average medical student and of the physical and mental attributes of the practicing physician must appeal to all those doctors who are not blinded by prejudices engendered because of the lack of breadth of view inherent in their jobs. The author, his distinguished educational background and his wide humanity, all preclude the possibility of serious dispute of his remarks by anyone other than his intellectual equal. It is a masterpiece of understatement to say that such a requirement will materially limit the scope of any debate. Let each doctor, whether a practitioner or a teacher, answer as well as he can the questions propounded by Mr. Lowell, and then re-evaluate his own contributions to the care of patients and the teaching of medical students. Then he will no longer be impressed by how much he knows and how much the student should learn, but rather by how much he has failed to grasp and by the good fortune that makes students physiologically incapable of remembering more than a small part of what is taught them until such time as they are able themselves to winnow the wheat from the chaff.

HOME CANNED FOOD

With the rising cost of foodstuffs and the emphasis on conservation of foods that inevitably accompanies war, there will undoubtedly be an increase in the practice of home canning. This widespread and economical procedure is one that is none the less fraught with a certain amount of danger. No kitchen is equipped with the apparatus for sterilization and control of the packing processes to the extent that commercial establishments are. In foods canned commercially under the present requirements the danger of botulism is virtually nil. In home-canned foods, on the other hand, botulism is somewhat of a problem even now.

Clostridium botulinum is a widespread organism and owing to its anaerobic nature grows in airtight containers. The spores of the bacillus are resistant to heat, and unless a high temperature is maintained over a sufficient period of time to kill them, the organism will begin to grow in the canned food and elaborate toxin.

There have been over two hundred sporadic outbreaks of botulism in this country; most of these have occurred on the West coast, although practically every state has had them. In most instances the infection has come from canned vegetables, rarely from meat products. This may be due to the greater frequency of vegetable canning in the home. Non-acid foods, such as beans, are more dangerous than tomatoes or other acid vegetables.

In Europe most of the outbreaks have been traced to contaminated sausage. Fortunately, although the spores are resistant to heat, the toxin itself is easily destroyed.

Two procedures can be recommended for the prevention of botulism. The first is to destroy all cans of food that show evidence of bulging or which are noted to contain gas bubbles or on opening have a rancid odor or slushy appearance. Secondly, all home-canned vegetables should be thoroughly heated to boiling before use. These precautions are so simple and so easily carried out that there can be virtually no excuse for the occurrence of this disease.

MEDICAL EPONYM

Bilharziasis

The first description of the clinical picture of this infestation appears in an article by Dr. Theodor Bilharz (1825–1862), then resident in Cairo, in the *Wiener medizinische Wochenschrift* (**6:** 49–52 and 65–68, 1856), entitled "Distomum haematobium und sein Verhältniss zu gewissen pathologischen Veränderungen der menschlichen Harnorgane [*Distomum haematobium* and Its Relation to Certain Pathologic Changes in the Human Urinary Organs]." A previous article, chiefly of zoological and anatomical interest, had appeared in the *Zeitschrift für wissenschaftliche Zoologie* (**4:** 52, 1852–53). The translation of a portion of the article is as follows:

> The symptoms of the disease, which is always chronic in nature, as will be shown, are partly the well-known one of catarrh of the bladder, partly peculiar and indicative of the presence of *Distomum haematobium* . . . a persistent sensation of pressure and heaviness in the hypogastric region . . . at times violent burning or colicky pain — tenderness in the bladder region . . . frequency of micturition — hematuria, usually small in amount, but persistent and frequently recurrent — admixture of mucus in the urine. . . . The catheter often meets with rough areas which may be confused with urinary calculi, but which may easily be distinguished by their immobility and soft consistence. It is often possible by simultaneous rectal examination to feel these areas between the finger and catheter.
>
> The most reliable and easiest method of diagnosis is microscopical examination, which usually reveals numerous ova in the mucous sediment of the urine and especially in the little clumps of blood cells.

R. W. B.

MASSACHUSETTS MEDICAL SOCIETY

SECTION OF OBSTETRICS AND GYNECOLOGY*

Raymond S. Titus, M.D., *Secretary*
330 Dartmouth Street
Boston

Sepsis and Thrombophlebitis Following Forceps Delivery

Mrs. A., a thirty-one-year-old para III, entered the hospital on February 5, 1938, because of scarlet fever at home; she was at term but not in labor.

The family history was negative. She had had the usual children's diseases and pneumonia. The tonsils and adenoids had been removed when she was a child, and the appendix in 1924. Catamenia began at twelve, were regular with a thirty-day cycle and lasted three or four days. The last period was April 12, 1937, making the expected date of confinement January 19. The first pregnancy was terminated at twelve weeks because of pernicious vomiting. The second pregnancy went to term and resulted in a living child weighing 10 pounds, 3 ounces; the convalescence was uneventful. The present pregnancy had been normal.

Before entering the hospital a Dick test was negative. The period of incubation had been passed, and a Dick test repeated after entry was again reported negative.

Two days later, February 7, she started in labor and was delivered by forceps of a child weighing 10 pounds, 15 ounces. There was more than the normal amount of bleeding after delivery but not enough for transfusion.

On February 9, forty-eight hours after delivery, the temperature rose to 104.0°F., and the pulse to 150. A consultation was held, and blood and uterine cultures were taken. The blood culture showed no growth after twenty-four hours. The uterine culture was positive for hemolytic streptococcus. Sulfanilamide was started immediately. She maintained a temperature of 103.0 to 104.0°F. for approximately twenty-four hours, when it came down to 102.0; on February 13 it had dropped to 100.0. However on February 13 she had a chill and the temperature rose again to 102.0°F., but came down to 99.0 on February 14. The pulse rate dropped to 100. The temperature and pulse gradually rose again until February 17 when the temperature was 104.0°F., with a pulse rate of 140 to 150,

*A series of selected case histories by members of the section will be published weekly. Comments and questions by subscribers are solicited and will be discussed by members of the section.

and remained there for two days. On February 17 she was given a direct transfusion of 500 cc. of blood. On February 18 there was edema of the left hip, tenderness in groin and induration of the left pelvic wall, and the clinical picture was diagnostic of a pelvic thrombophlebitis. It was believed that the fever might be due to the sulfanilamide, so the drug was discontinued. Following omission of the drug, the temperature dropped steadily until it reached 98.0°F. on February 20, with a pulse of 80 to 90. The temperature remained normal for two days, then rose to 104.0°F. with a corresponding rise in the pulse rate. After three days it again reached normal, where it remained until her discharge on March 18.

Sulfanilamide was administered in the following amounts: February 10, 70 gr., February 11, 100 gr., February 12, 70 gr., February 13, 90 gr., February 14, 60 gr., February 15, 40 gr., February 16, 80 gr., and February 17, 80 gr.

The laboratory work was as follows: February 10, white-cell count 16,000 and red-cell count 3,080,000; February 12, white-cell count 18,000 and red-cell count 2,800,000; February 14, white-cell count 17,100 and red-cell count 2,980,000; February 17, before transfusion, white-cell count 16,800 and red-cell count 3,200,000, and after transfusion, white-cell count 11,000, red-cell count 4,160,000 and hemoglobin 75 to 80 per cent; February 19, white-cell count 10,500; February 21, white-cell count 12,200; February 23, white-cell count 20,000 and red-cell count 3,970,000; February 28, white-cell count 7700, red-cell count 4,270,000 and hemoglobin 75 per cent; March 4, white-cell count 7800, red-cell count 4,270,000 and hemoglobin 75 per cent.

Comment. This is a case of puerperal infection of known hemolytic streptococcus origin, which started forty-eight hours after a forceps delivery. Whether or not the scarlet fever at home had anything to do with the disease is of course questionable. The temperature and pulse rose abruptly, a consultation was held, and sulfanilamide therapy immediately instituted. Following a gradual decline, the temperature and pulse again rose, this time coincident with a definite pelvic thrombophlebitis. The temperature reached normal in forty-eight hours and stayed normal for two days, rising again, with a corresponding rise in pulse rate, and finally reaching normal after a three-day febrile course, where it remained until discharge.

The treatment was conservative throughout. Sulfanilamide was given for eight days and then discontinued. The thrombophlebitis was treated by the application of poultices to the lower abdomen, and the patient was kept in bed for two weeks after a normal temperature had been reached and maintained. She was a very sick woman and while it cannot be definitely said that sulfanilamide affected the cure, it certainly is probable.

This case illustrates the proper handling of uterine infection. At the onset of the fever, cultures should be taken from the uterus and the blood. Sulfanilamide should be given whenever streptococci are proved to exist. This work can best be carried on with the assistance of a trained bacteriologist. In this case the uterus was left alone. The occurrence of thrombophlebitis proves that sulfanilamide does not necessarily prevent complications, and the use of heat rather than cold is the routine generally accepted at the present time.

MEDICAL POSTGRADUATE EXTENSION COURSES

The following sessions of the Medical Postgraduate Extension Courses have been arranged for the week beginning March 24:

BERKSHIRE

Thursday, March 28, at 4:30 p.m., at the Bishop House of Mercy Hospital, Pittsfield. Head and Spine Injuries. Instructor: Walter R. Wegner. Harry G. Mellen, *Chairman.*

BRISTOL SOUTH (Fall River Section)

Tuesday, March 26, at 4:30 p.m., at the Union Hospital, Fall River. Cardiovascular Disease: Eleven important questions about heart disease and their answers. Instructor: Edward F. Bland. Howard P. Sawyer, *Chairman.*

FRANKLIN

Thursday, March 28, at 8:15 p.m. at the Franklin County Hospital, Greenfield. Syphilis in Pregnancy and the Offspring. Instructor: Francis M. Thurmon. Halbert G. Stetson, *Chairman.*

HAMPDEN

Thursday, March 28, at 4:00 p.m., at the Academy of Medicine, Professional Building, 20 Maple Street, Springfield, and at 8:15 p.m., in the Outpatient Department of the Skinner Clinic, Holyoke Hospital, Holyoke. Common Problems in Neurology: Indications for lumbar puncture. Instructor: H. Houston Merritt. George L. Schadt, *Chairman.*

HAMPSHIRE

Thursday, March 28, at 4:15 p.m., in the Nurses' Home of the Cooley Dickinson Hospital, Northampton. Gonorrhea in the Female. Instructor: Alonzo K. Paine. Warren P. Cordes, *Chairman.*

MIDDLESEX SOUTH

Tuesday, March 26, at 4:30 p.m., at the Cambridge Hospital, 330 Mt. Auburn Street, Cambridge. Syphilis in Pregnancy and the Offspring. Instructor: C. Guy Lane. Dudley Merrill, *Chairman.*

NORFOLK

Thursday, March 28, at 8:30 p.m., at the Norwood

Hospital, Norwood. Pneumonia. Instructor: Maxwell Finland. Hugo B. C. Riemer, *Chairman.*

NORFOLK SOUTH

Monday, March 25, at 8:30 p.m., at the Quincy City Hospital, Quincy. Common Problems of Neurology: Indications for lumbar puncture. Instructor: T. J. C. von Storch. David L. Belding, *Chairman.*

PLYMOUTH

Tuesday, March 26, at 4:00 p.m., in the Nurses' Home of the Brockton Hospital, Brockton. Pneumonia. Instructor: Earle M. Chapman. Walter H. Pulsifer, *Chairman.*

SUFFOLK

Thursday, March 28, at 4:30 p.m., in John Ware Hall, Boston Medical Library, 8 Fenway, Boston. The Use of Drugs in the Treatment of Childhood Infections. Instructor: John A. V. Davies. Reginald Fitz, *Chairman.*

DEATH

ADAMS — Zabdiel B. Adams, M.D., of Brookline, died March 16. He was in his sixty-sixth year.

Dr. Adams attended the Massachusetts Institute of Technology and received his degree from the Harvard Medical School in 1903. From 1903 to 1905 he was house surgeon at the Boston City Hospital. From 1905 to 1906 he was assistant surgeon at the Children's Hospital and from 1906 to 1924 orthopedic surgeon at the Massachusetts General Hospital, serving as chief of the orthopedic service the last two years. From 1925 until his death he served as consulting orthopedic surgeon at the Lakeville State Sanatorium in Middleboro.

For six years Dr. Adams was instructor in orthopedic surgery at Harvard Medical School and associate in anatomy there from 1919 until his death.

Among his affiliations were fellowships in the Massachusetts Medical Society and the American Medical Association, and memberships in the American Orthopaedic Association, of which he was president in 1929, and the American Academy of Orthopaedic Surgeons.

His widow, a sister, a daughter, a son and two grandchildren survive him.

NEW HAMPSHIRE MEDICAL SOCIETY

WOMAN'S AUXILIARY, AMERICAN MEDICAL ASSOCIATION

The eighteenth annual convention of the Woman's Auxiliary to the American Medical Association will be held in New York City, June 10–14, with headquarters in the Hotel Pennsylvania. In view of the fact that the second edition of the World's Fair will accelerate advance hotel reservations, it is urged that reservations be made immediately through the Housing Bureau, which has been set up by the American Medical Association. Inquiries should be addressed to Dr. Peter Irving, Room 1036, 233 Broadway, New York City.

DEATH

BIELSCHOWSKY — Alfred Bielschowsky, M.D., director of the Dartmouth Eye Institute, died in Brooklyn, New York, on January 5, at the age of sixty-eight.

Professor of ophthalmology and chief of the Eye Clinic at the University of Breslau, Germany, Dr. Bielschowsky came to the Dartmouth Eye Institute as visiting ophthalmologist in 1934, and was appointed visiting lecturer in physiologic optics in 1935. Dr. Bielschowsky had served as director of the Eye Institute since 1937. In addition to his work at Dartmouth, he had been an associate in ophthalmology at the Harvard Medical School since 1938.

Dr. Bielschowsky is survived by his widow, Frieda (Blume) Bielschowsky, and a daughter.

MISCELLANY

VALUE AND LIMITATIONS OF THE TUBERCULIN TEST

The value of the tuberculin test as a means of finding cases of tuberculosis by mass testing has lately been questioned. At the last annual meeting of the National Tuberculosis Association a symposium on the tuberculin test and x-ray was presented. One of the speakers (Long, E. R.: The Tuberculin Test: Its value and its limitations. *Am. Rev. Tuberc. 40*:607–620, 1939) summarized the values and limitations of the tuberculin test in a paper, from which the following abstract is derived.

The queries and doubts that have arisen concerning the tuberculin test within the last two years have had a healthful effect on our anti-tuberculosis campaign in forcing us to review our current procedures and test the validity of past beliefs. This paper omits all discussion of the tuberculin test except as a means for finding cases of tuberculosis.

In guinea pigs the test is practically infallible. The success of the campaign for eradication of bovine tuberculosis, based, as it is, on the tuberculin test, is a strong empiric argument for the practical value of the test. The almost constant finding of tuberculous lesions in cattle slaughtered because of a positive tuberculin reaction, and the failure to find tuberculosis in the routine inspection of millions of cattle not reacting and killed for meat production, is tangible evidence for its specificity and adequacy. In certain other animals, however, tuberculin allergy is far less conspicuous.

Tuberculin sensitivity in man can never be studied with the same thoroughness as in guinea pigs or cattle. However, observations on children vaccinated with BCG have enabled us to study the results of artificial infection and its relation to tuberculin sensitivity and these studies indicate that after very mild infection an overwhelming majority of children become tuberculin-positive.

We are here not concerned with the total number of tuberculin reactors that may be detected, but rather with the detection of significant tuberculosis by the use of the tuberculin reaction as a preliminary screen. ("Significant tuberculosis" or "a case of tuberculosis" in its public-health sense, is restricted to infection with the tubercle bacillus which has proceeded to the point where it has produced symptoms recognized as those of clinical tuberculosis, or has brought about changes demonstrated by x-ray examination that are considered to indicate tuberculous disease.) This definition places heavy responsibility on x-ray examination. If the tuberculin test is used at all in case-finding, it is as a screen to obviate the necessity of the more expensive x-ray examination. (In young adult groups, one third or more of those tested with tuberculin may not react, and these need not be x-rayed.) It is believed by some that, on the basis of cost alone, saving x-ray examination of one third of the subjects would not counterbalance the cost of the tuberculin test.

What does the standard first and second dose method of tuberculin testing (fully defined by the author) detect and overlook? Of 610 cases of pulmonary tuberculosis diagnosed in the Henry Phipps Institute during five consecutive years, all but 1 reacted to tuberculin. Among the 609 reactors, 94 per cent of the white, and 96 per cent of the colored reacted to the first (minimal) dose (OT used in earlier, PPD in later years). However, in other similar clinics and in hospitals attention is drawn occasionally to cases of unquestioned tuberculosis, even with positive sputum, in which the reaction is negative. Explanations for these exceptions are easily found; the fact remains that cases of anergy in typical hospital patients are probably few.

However, clinic experience is not representative of the conditions of case finding as they occur in mass surveys; some surveys deal with groups of high and others with low infection incidence. Evidence shows that the tuberculin test is an efficient preliminary case-finding measure in groups under relatively heavy exposure, as nurses in a hospital or sanatorium. For example, among 400 nurses, 22 "cases" of tuberculosis have occurred, all of which developed or already exhibited tuberculin sensitivity some months in advance of the onset of a recognized lesion, and no case has developed in the absence of tuberculin sensitivity. In groups under exceptional exposure the tuberculin test is an effective warning sign indicating the need of close and frequent observation.

Studies conducted by the United States Public Health Service and the Department of Health of Tennessee have shown that the tuberculin test is far from being the sharp indicator, once popularly supposed, of previous simple tuberculous infection. These studies disclosed a large amount of what appears to be healed primary tuberculosis in people not reacting to tuberculin. A supplementary survey conducted at Hagerstown, Maryland, however, indicated that for case-finding purposes the tuberculin test is highly effective. In the 1000 subjects examined by both tuberculin test and x-ray, 13 cases of tuberculosis were discovered, all but 1 of which reacted to tuberculin; this case showed scarred apical disease of slight extent and had been apparently long arrested. The author believes that an accuracy of about 90 to 95 per cent may be expected of the tuberculin test as a means of selecting subjects for examination by x-ray, but admits that a loss of 5 to 10 per cent is serious, but perhaps inevitable.

The attempt to divide all mankind into two groups, infected and not infected, is futile and probably responsible for most of the present confusion. Two other groups must be recognized: those infected, not yet positive, but to be positive shortly thereafter; and those infected and previously positive, but now negative. (A possible fifth group would include those who are infected and never develop a positive reaction.)

Allergy does not develop simultaneously with infection. There may be an interval of from two to three weeks between infection and a positive tuberculin reaction. In any large survey there may be a few cases recently infected and not tuberculin-positive. In some of these, x-ray lesions may develop.

The second group (previously positive, now negative) is more important and probably the greatest single cause for our present confusion. We have tended to overlook the fact that with the arrest and healing of tuberculous lesions allergy wanes and finally may disappear.

In a period, however, when the mortality rate is dropping steadily, and the morbidity rate is following in some proportionate relation, and when in addition an improved control of tuberculosis is bringing about a steadily increasing isolation of patients with open lesions, it is only to be expected that reinfection, the rule in the past, will become progressively less frequent. The infections that formerly constantly restored a waning allergy will be far less frequent in the future and we may look forward to the time when loss of allergy will be as common as its maintenance.

A study of 2490 positive reactors, all examined at the Henry Phipps Institute, showed that 276, or approximately 11 per cent, became negative, either transiently or for the balance of the period of observation. It was disclosed also that the stronger the original reaction the less frequently it reverted to negative, and vice versa. Further, the correlation with exposure was equally striking. In 58 per cent of the families in which no tuberculosis was present, the tuberculin reaction became negative in some member of the family, while in families where there was continuously a member with sputum-positive tuberculosis, allergy disappeared in some member of the household in only 8 per cent of the families.

The fact that allergy tends to disappear where there is no exposure, and has more and more tendency to remain as exposure is presumably more frequent, suggests strongly that reinfection is responsible for the maintenance of the positive reaction. The epidemiological significance of this fact is obvious.

In the 276 cases in which the reaction became negative, no abnormality was detected in the film in 94 per cent and there were no cases of active reinfection type tuberculosis in the entire group. In 10 cases with what were read as calcified lesions, the reaction became negative.

Two cases are recorded in which tuberculin-negative children with calcified lesions became tuberculin-positive coincidentally with the development of fresh, active tuberculosis. — Reprinted from *Tuberculosis Abstracts*, March, 1940.

NOTE

The seventh E. Starr Judd Lecture at the University of Minnesota was given on March 14 by Dr. Edward D. Churchill, John Homans Professor of Surgery, Harvard Medical School, and chief of the West Surgical Service, Massachusetts General Hospital. The subject was "Surgery of the Lungs."

CORRESPONDENCE

OBSTETRICS OF FORMER DAYS

To the Editor: Just after the turn of the century, a large number of immigrants of the laboring class came to this town. There was no birth control, no race suicide. Among certain groups was a belief, brought from the home country, that if a woman did hard physical labor during her pregnancy, and particularly during the first stage of labor, the second stage would be easier and shorter. And perhaps they were right.

May I cite a case in point. Labor began while the woman was digging potatoes in a nearby field. When she could remain on her feet no longer she was carried to the house and placed in bed, just as she had been picked up. As usual, no physician had been engaged, but one was hastily summoned. He arrived barely in time to witness the birth. "Recovery was uneventful."

Similar incidents with minor variations could be cited

by the score, and all without casualties to mother or child.

What did it mean? It had led to natural selection of child-bearing women for generations in the home country — Mother Nature can do a pretty good job if she does not have too much assistance or interference.

Furthermore, it resulted in large families to those best able to produce them. I regret to add that the mothers of the next generations have not been so spontaneous or so productive, with seemingly far less resistance.

Those early immigrants called physicians only because they had been told that it was "the law" in this country. Only neighbors' wives attended the births "at home," but if a woman survived her first childbirth there was seldom any trouble in succeeding births. The death rate among primiparae was not known, as they were recorded only by the parish priest who attended the funeral. The living births were recorded at christenings, but the stillbirths were not reported at all, and the causes of death only when the priest made the diagnosis and recorded it if he saw fit.

As there are but a few of us left who were active among those people in that period I have felt that the history of that ten or fifteen years should be recorded.

Being a young man, recently out of college, I was able to learn and speak the necessary part of their language and so was much in demand. Incidentally, I was delighted to get ten dollars and satisfied with five dollars and often received only the twenty-five cents for the birth return — perhaps it was all the service was worth in comparison with the time and care of the modern obstetric case.

FRANK T. WOODBURY, M.D.

21 Chestnut Street,
Wakefield, Massachusetts.

NOTICES

REMOVAL

HAROLD N. MCKINNEY, M.D., announces the removal of his office to 149 Warren Street, Roxbury.

BOSTON DISPENSARY

A luncheon meeting of the clinical staff of the Boston Dispensary will be held on Friday, March 29, in the auditorium of the Joseph H. Pratt Diagnostic Hospital at 12 o'clock noon. Dr. Leonard J. Carmichael will give the second in a series of talks by different speakers on the past, present and future of the New England Medical Center and its component parts. Dr. Carmichael's subject will be "Tufts and the New England Medical Center."

All interested in the subject are cordially invited to attend.

PETER BENT BRIGHAM HOSPITAL

A joint medical and surgical clinic at the Peter Bent Brigham Hospital will be held on Wednesday, March 27, from 2 to 4 p.m. Drs. H. F. Newton and S. A. Levine will speak on "Dyspnea."

Physicians and students are cordially invited to attend.

NEW ENGLAND HOSPITAL FOR WOMEN AND CHILDREN

The monthly clinical conference and meeting of the staff of the New England Hospital for Women and Children will be held on Thursday evening, April 4, at 7:15 in the classroom of the nurses' residence. Dr. Laurence B. Ellis, the guest speaker, will talk on "Circulatory Failure." A question period will be led by Dr. Elsie W. Brown.

MASSACHUSETTS GENERAL HOSPITAL

A meeting of the Hospital Research Council will be held in the White Building Amphitheater of the Massachusetts General Hospital, on Tuesday, March 26, at 5:00 p.m.

PROGRAM

A New Method for Studying Bone Growth. Dr. T. H. Ingalls.

The Treatment of Trigeminal Neuralgia with Vitamin B_1 (Thiamin). Drs. A. S. Rose and B. M. Jacobson.

Studies with Radioactive Arsenic:

- Demonstration of Radioactive-Tracer Counting Apparatus. Dr. A. F. Kip.
- Distribution of Arsenic between Blood and Viscera. Dr. F. T. Hunter.

SUFFOLK DISTRICT MEDICAL SOCIETY

A meeting of the Suffolk District Medical Society will be held at the Boston Medical Library, 8 Fenway, on Wednesday, March 27, at 8:15 p.m.

PROGRAM

Scientific meeting:

- Acute Infectious Diarrhea. Dr. Roy F. Feemster.
- The Maintenance of Adequate Nutrition in Chronic Diarrhea. Dr. Maurice B. Strauss.

Discussion by Drs. Chester M. Jones and Charles F. McKhann.

NORFOLK DISTRICT MEDICAL SOCIETY

A regular meeting of the Norfolk District Medical Society will be held in the Hotel Somerset, Boston, on Tuesday evening, March 26, at 8:30. Tel. KEN 2700.

PROGRAM

Business.

Diseases of the Colon from the Medical and Surgical Standpoints. Dr. Edward L. Young.

Discussion to be opened by Drs. Charles W. McClure and John W. Spellman.

Collation.

NEW ENGLAND HEART ASSOCIATION

The next meeting of the New England Heart Association will be held at the Mallory Institute of Pathology, Boston City Hospital, on Monday, March 25, at 8:15 p.m.

PROGRAM

Cor Triloculare in a Thirteen-Year-Old Boy with Pulmonic Stenosis. Dr. O. J. Wollenman, Jr.

An Unusual Case of Dissecting Aneurysm. Dr. George Bartol.

Anticoagulants and Sulfapyridine in the Treatment of Subacute Bacterial Endocarditis. Dr. C. N. Duncan.

Changes in the Cutaneous Circulation of Male Castrates and Eunuchoids. Dr. E. A. Edwards.

A Case of Temporal Arteritis. Dr. H. J. Jeghers.

Paroxysmal Precordial Pain in Mitral Stenosis. Dr. A. M. Burgess, Jr.

The Significance of Marked Left Deviation in the Electrocardiogram. Dr. J. M. Faulkner.

Interested physicians and medical students are invited.

UNITED STATES MARINE HOSPITAL

The staff meeting of the United States Marine Hospital, Chelsea, will be held at "The Hut," on Friday afternoon,

March 29, at 4:00. Dr. Chester S. Keefer will speak, his subject being "Some Clinical Aspects of Acute and Chronic Bright's Disease."

MASSACHUSETTS TUBERCULOSIS LEAGUE

The annual meeting of the Massachusetts Tuberculosis League will be held on Thursday, March 28, at the Middlesex County Sanatorium, Trapelo Road, Waltham, Massachusetts.

PROGRAM

4:30 p.m. Personally conducted tours through Middlesex County Sanatorium.
5:15 p.m. Business session. Election of officers and directors.
6:30 p.m. Dinner.
7:30 p.m. Prevention and Control of Tuberculosis in Massachusetts. Dr. Frederick T. Lord.
7:50 p.m. The County Sanatorium and Its Work in Middlesex County. Drs. Sumner H. Remick and Henry D. Chadwick.

The dinner will be $1.00 per person. Reservations should be sent to: Massachusetts Tuberculosis League, 1148 Little Building, Boston. Tel. HAN 5480.

WALTHAM MEDICAL MEETING

The regular monthly clinicopathological conference of the Metropolitan State Hospital will be held at the hospital on Wednesday evening, March 27, at 8:00. A case presenting features of neurological and medical interest will be presented by Drs. Richard C. Wadsworth and Emerick Friedman. It will be discussed by Dr. Siegfried J. Thannhauser.

All interested physicians are cordially invited.

MASSACHUSETTS DEPARTMENT OF CIVIL SERVICE AND REGISTRATION

School Physician (Male or Female) $5 a Day, Boston
School Physician (Female) $250 a Year, Northampton
School Physician (Male) $1000 a Year, Northampton

Director of State Civil Service, Ulysses J. Lupien, has announced that competitive examinations are to be held on April 20 in order to find eligibles for appointment to the above positions.

The entrance requirement is as follows: applicants must be registered physicians under the State Board of Registration in Medicine. The last date for filing applications is Saturday, April 6, at 12 o'clock noon.

CONSULTATION CLINICS FOR CRIPPLED CHILDREN IN MASSACHUSETTS, UNDER THE PROVISIONS OF THE SOCIAL SECURITY ACT

CLINIC	DATE	ORTHOPEDIC CONSULTANT
Salem	April 1	Harold C. Bean
Haverhill	April 3	William T. Green
Lowell	April 5	Albert H. Brewster
Gardner	April 9	Mark H. Rogers
Brockton	April 11	George W. Van Gorder
Pittsfield	April 15	Francis A. Slowick
Northampton	April 17	Garry deN. Hough, Jr.
Fall River	April 22	Eugene A. McCarthy
Hyannis	April 23	Paul L. Norton
Worcester	April 26	John W. O'Meara

INTERNATIONAL COLLEGE OF SURGEONS

The New England Activities Committee of the International College of Surgeons announces a program to be held at the Hospital of St. Raphael, New Haven, Connecticut, on Wednesday, March 27.

PROGRAM

9 a.m. to 12 m. A series of operations will be performed.
12:30 p.m. Luncheon.
2 p.m. to 4:30 p.m.:

Opening Address. Dr. G. S. Foster.
Address of Welcome. Dr. Joseph Linde.
Appendicitis. Dr. James A. Gettings.
Spondylolisthesis. Dr. Dennis O'Connor.
Partial Intestinal Obstructions. Dr. Andrew McQueeney.
Talk on Gastric Surgery. Dr. Edward Kirschbaum.
Gall Bladder Surgery. Dr. A. J. Mendillo.
On Head Injuries. Dr. William German.
Pathology. Dr. Robert Nesbit.

SOCIETY MEETINGS AND CONFERENCES

CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING SUNDAY, MARCH 24

MONDAY, MARCH 25

*8:15 p.m. New England Heart Association. Mallory Institute of Pathology, Boston City Hospital.

TUESDAY, MARCH 26

*9–10 a.m. Diaphragmatic Hernias. Dr. Joseph H. Marks. Joseph H. Pratt Diagnostic Hospital.
5 p.m. Hospital Research Council. Massachusetts General Hospital, White Building amphitheater.

WEDNESDAY, MARCH 27

*9–10 a.m. Hospital case presentation. Dr. S. J. Thannhauser. Joseph H. Pratt Diagnostic Hospital.
*2–4 p.m. Dyspnea. Drs. H. F. Newton and S. A. Levine. Peter Bent Brigham Hospital.
6:30 p.m. Tufts College Medical School Alumni Association. Hotel Somerset, Boston.

THURSDAY, MARCH 28

*9–10 a.m. The medical, social and preventive aspects of a selected case. Preceptors and medical students. Joseph H. Pratt Diagnostic Hospital.

FRIDAY, MARCH 29

*9–10 a.m. Some Observations on Pituitary Adenomas. Dr. M. C. Sosman. Joseph H. Pratt Diagnostic Hospital.
*12 m. Luncheon meeting of the clinical staff of the Boston Dispensary. Joseph H. Pratt Diagnostic Hospital.
8 p.m. New England Pathological Society. Peter Bent Brigham Hospital.

SATURDAY, MARCH 30

*9–10 a.m. Hospital case presentation. Dr. Thannhauser. Joseph H. Pratt Diagnostic Hospital.

*Open to the medical profession.

MARCH 25 — Monthly clinical meeting and luncheon. Carney Hospital. Page 469, issue of March 14.

MARCH 27 — Clinicopathological conference of the Metropolitan State Hospital, Waltham. Notice above.

MARCH 27 — International College of Surgeons. Notice above.

MARCH 28 — Massachusetts Tuberculosis League. Notice above.

MARCH 29 — Staff meeting. United States Marine Hospital. Page 514.

APRIL 4 — Monthly clinical conference and meeting of the staff. New England Hospital for Women and Children. Page 514.

APRIL 11 — Pentucket Association of Physicians. 8:30 p.m., Hotel Bartlett, Haverhill.

APRIL 15–17 — American Association for the Study of Goiter. Page 203, issue of February 1.

APRIL 15–19 — New England Health Institute. Page 284, issue of February 15.

APRIL 24 — Massachusetts Dental Society. Page 365, issue of February 29.

APRIL 24–26 — Scientific Session. Academy of Physical Medicine. Hotel John Marshall, Richmond, Virginia.

MAY 10–18 — American Scientific Congress. Page 1043, issue of December 28.

MAY 13 — United States Pharmacopoeial Convention. Page 202, issue of February 1.

JUNE 7–8 — American Heart Association. Page 469, issue of March 14.

JUNE 7–9 — American Board of Obstetrics and Gynecology. Page 1019, issue of June 15.

JUNE 8 and 10 — American Board of Ophthalmology. Page 719, issue of November 2.

JUNE 10–14 — American Physicians' Art Association. Page 332, issue of February 22.

JUNE 23–25 — Maine Medical Association. Annual meeting. Rangeley Lakes.

OCTOBER 21 — American Board of Internal Medicine, Inc. Page 369, issue of February 29.

DISTRICT MEDICAL SOCIETIES

ESSEX SOUTH

APRIL 3 — Page 422, issue of March 7.

MAY 8 — Annual meeting. Salem Country Club, Peabody.

FRANKLIN

MAY 14 — Franklin County Hospital, Greenfield.

HAMPSHIRE

MAY 8, at 11:30 a.m. at the Cooley Dickinson Hospital, Northampton.

MIDDLESEX EAST

MAY 15, at 12:15 p.m. at the Unicorn Country Club, Stoneham.

MIDDLESEX NORTH

APRIL 24.

JULY 31.

OCTOBER 30.

NORFOLK

MARCH 26 — Page 514.

NORFOLK SOUTH

APRIL 4.

MAY 2.

PLYMOUTH

APRIL 18 — State Farm.

MAY 16 — Lakeville State Sanatorium, Middleboro.

SUFFOLK

MARCH 27 — Page 514.

APRIL 24 — Annual meeting in conjunction with the Boston Medical Library. Election of officers. Program and speakers to be announced later.

MAY 2 — Censors' meeting. Page 244, issue of February 8.

WORCESTER

APRIL 10 — Worcester Hahnemann Hospital.

MAY 8 — Worcester Country Club.

Meetings begin with a dinner at 6:30 p.m. and are followed by a business and scientific meeting.

BOOKS RECEIVED FOR REVIEW

Trapping the Common Cold. George S. Foster. 125 pp. New York: Fleming H. Revell Co., 1940. $1.25.

Diathermie chirurgicale. C.-A. Arraud. 216 pp. Paris: Gauthier-Villars, 1939. 50 Fr. fr.

Studies in the Development of Young Children. Nancy Bayley. 45 pp. Berkeley, California: University of California Press, 1940. 35c.

The Electrocardiogram in Congenital Cardiac Disease: A study of 109 cases, 106 with autopsy. Maurice A. Schnitker. 147 pp. Cambridge, Massachusetts: Harvard University Press, 1940. $3.00.

Transactions of the American Association of Genito-Urinary Surgeons: Fifty-first annual meeting held at Williamsburg, Virginia, May 24, 25 and 26, 1939. Vol. 32. 391 pp. Saint Paul and Minneapolis: Bruce Publishing Co., 1939.

A Textbook of Surgery. John Homans. Fifth edition. 1272 pp. Springfield, Illinois, and Baltimore: Charles C Thomas, 1940. $8.00.

The Management of Obstetric Difficulties. Paul Titus. Second edition. 968 pp.. St. Louis. C. V Mosby Co., 1940. $10.00.

Modern Diabetic Care: Including instructions in the diet and the use of the old and new insulins. Herbert Pollack. 216 pp. New York: Harcourt Brace and Co., 1940. $2.00.

The Medical Career: And other papers. Harvey Cushing. 302 pp. Boston: Little, Brown & Co., 1940. $2.50.

Ten Years in the Congo. W. E. Davis. 301 pp. New York: Reynal & Hitchcock, 1940. $2.50.

BOOK REVIEWS

Transactions of the American Association of Genito-Urinary Surgeons: Fiftieth annual meeting held at Absecon, New Jersey, May 2, 3 and 4, 1938. Vol. 31. 405 pp. St. Paul and Minneapolis: The Bruce Publishing Co., 1938.

This volume contains the proceedings of the annual meeting of the American Association of Genito-Urinary Surgeons and consists of twenty-nine papers by leading American urologists, together with the discussions of the papers. That the specialty of urology is constantly increasing its scope and connections with other branches of medicine is obvious from the variety of subjects dealt with, such as arterial hypertension occurring in unilateral kidney disease, transplantation of endocrine tissue, endometriosis of the bladder, adrenocortical syndromes and adrenal tumors, and the cure of lung metastasis from kidney carcinoma by lobectomy. Other papers deal with general principles of treatment, such as the treatment of cancer with the newer types of roentgen-ray therapy; in addition there are the usual case reports of rare conditions, with reviews of the literature. All in all, this volume contains some excellent and important papers and evidences the progressiveness of American urology.

Pathogenic Microörganisms: A practical manual for students, physicians and health officers. William H. Park and Anna W. Williams. Eleventh edition. 1056 pp. Philadelphia: Lea & Febiger, 1939. $8.00.

"Park and Williams" is now a classic text and from the beginning, when it was first published in 1899, has taken its place among the foremost treatises on bacteriology in any language. Well organized and thorough, it has always maintained that wise balance between theory and practical experience which characterized the mentality of its senior author. Dr. Park was one of the great American bacteriologists; his studies covered a wide range and he soundly and sagaciously correlated his specialty with medical practice and public health. He utilized, in the writing of this book, moreover, the accumulated experience of a distinguished group of collaborators at the New York City laboratories, among whom were Anna Williams, Charles Krumwiede and, in the present edition, Ralph Muckenfuss and other active and competent men and women. The book represents a complete and comprehensive treatise; it is a textbook and a reference book, a type which the reviewer favors over elementary and abbreviated texts, even for undergraduate medical students. It is one of the few books that include an excellent practical section on clinical protozoology and an adequate treatment of the yeasts and molds.

This edition is in every sense worthy of its predecessors and continues the fine tradition of Dr. Park whose recent death was an irreparable loss to science.

Channing Sanitarium, Inc.

Wellesley Avenue, Wellesley, Massachusetts

(Established in Brookline 1879. Transferred to Wellesley 1916.)

Eleven buildings on fifty acres of high woodland especially designed and built for the care and treatment of nervous cases. Six dormitory cottages. Separate cottage for occupational therapy. Separate cottage for sports, bowling, squash, etc. Tennis court. Ample accommodations and modern equipment for thirty-five cases.

JACKSON M. THOMAS, M.D., *Superintendent* — CLIFFORD G. ROUNSEFELL, M.D., *Resident Physician*

New England Sanitariu and Hospital MELROSE, MA

¶ Located on the shores of picturesque Spot Pond in the midst of 4500-acre State Park, only eight miles from Boston. One hundred and forty pleasant, home-like rooms. Eight resident physicians and more than one hundred trained nurses, experienced dietitians and technicians.

¶ Modern scientific equipment for treatment and diagnosis. Hydrotherapy, electrotherapy, x-ray, occupational therapy, electrocardiograph, laboratory and gymnasium. Full health examination and careful diagnosis. Special attention to diet.

¶ No mental, tuberculous or contagious cases received. Physicians invited to visit the institution. Fully equipped for care of medical, surgical and maternity cases.

Member of the American Hospital Association and Approved by the American College of Surgeons

For information and booklet, address: W. A. RUBLE, M.D., *Medical Directo*

Bournewood Hospital

300 SOUTH STREET, BROOKLINE, MASS.

Established 1884

For a limited number of cases of Mental and Nervous Diseases

POST OFFICE, CHESTNUT HILL

Telephone PARkway 0300

GEORGE H. TORNEY, M.D.

BREAST MILK

may be obtained at the offices and laboratory of

The

DIRECTORY FOR MOTHERS' MILK

Incorporated

221 Longwood Avenue, Boston

Telephone BEAcon 5330

Prices will be adjusted to make the milk available to all who need it

Sent packed in ice to all parts of New England

SHARON SANATORIUM

Pioneer Institution for Treatment of DISEASES OF THE CHEST

Private rooms. Out-door sleeping porches. Home-like food. Modern methods of treatment. For terms, address DR. WALTER A. GRIFFIN, *Supt.* SHARON, MASS.

Harvard Medical School

Courses for Graduates

Special courses for Commonwealth Fund Post-graduate Medical Fellows in Medicine, Pediatrics, Obstetrics and Office Surgery are offered for one month.

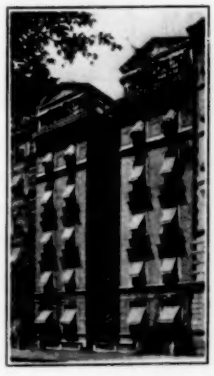
For further information apply to the Assistant Dean, Courses for Graduates, Harvard Medical School, Boston, Massachusetts.

Charles B. Towns Hospital

Exclusively for

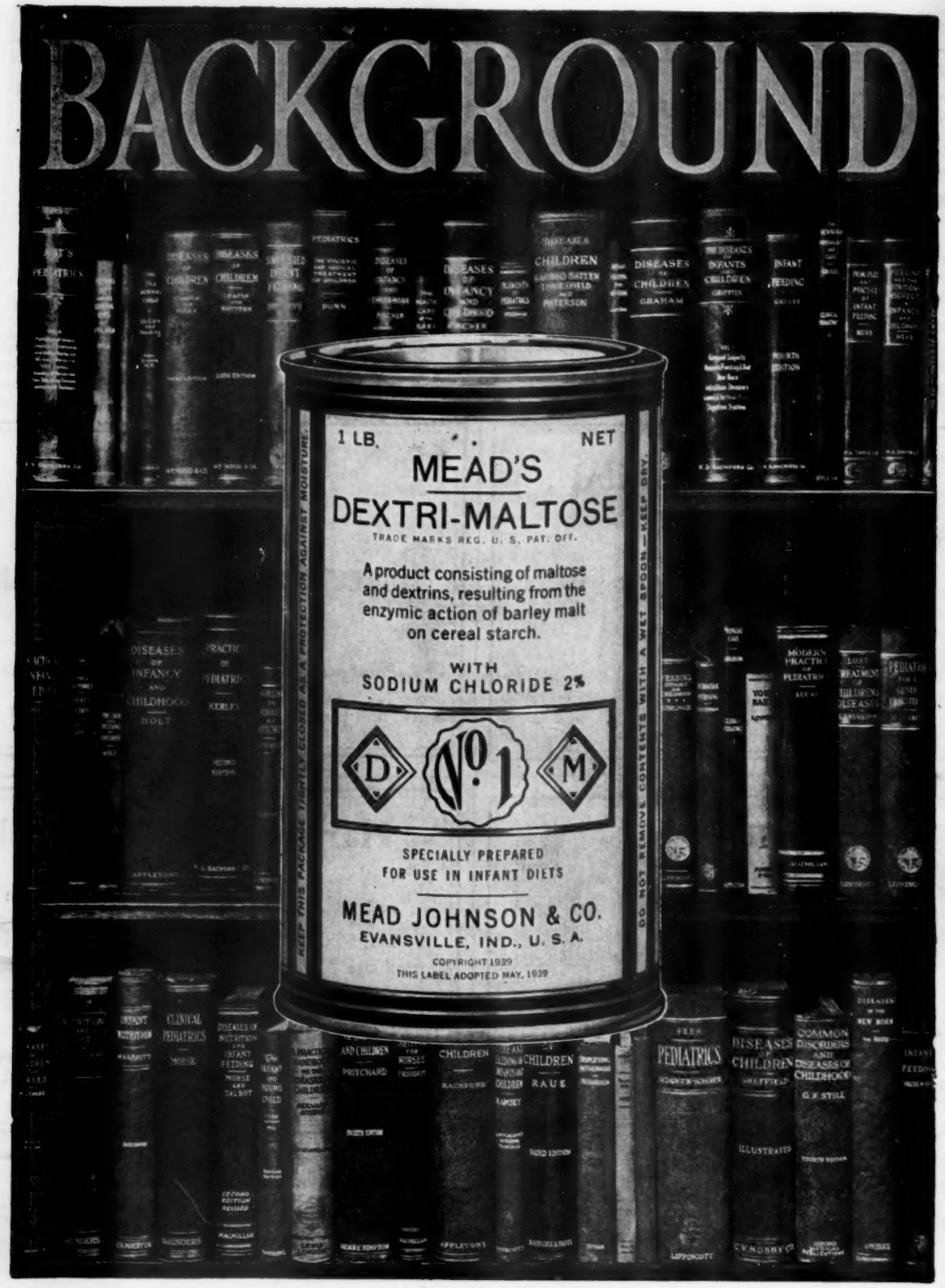
Alcoholism and Drug Addiction

ESTABLISHED 40 YEARS



No other type of case accepted. As we obtain a definite medical result the length of hospitalization is minimized. This enables us to make a flat rate covering all hospital expenses for the necessary time of stay. Our literature will explain. Let us mail you a complimentary copy of our publication, *"Drug and Alcoholic Sickness."* You will find chapters, such as *Reclaiming the Drinker, Use and Abuse of Hypnotics, Removing the Craving, Prevention of Alcoholic Insanity,* etc., very interesting.

293 CENTRAL PARK WEST — **NEW YORK, N.Y.**


BACKGROUND
1 LB. NET
MEAD'S
DEXTRI-MALTOSE
TRADE MARKS REG. U. S. PAT. OFF.
A product consisting of maltose and dextrins, resulting from the enzymic action of barley malt on cereal starch.
WITH
SODIUM CHLORIDE 2%
D
No. 1
M
SPECIALLY PREPARED
FOR USE IN INFANT DIETS
MEAD JOHNSON & CO.
EVANSVILLE, IND., U. S. A.
COPYRIGHT 1939
THIS LABEL ADOPTED MAY, 1939
KEEP THIS PACKAGE TIGHTLY CLOSED AS A PROTECTION AGAINST MOISTURE.
DO NOT REMOVE CONTENTS WITH A WET SPOON—KEEP DRY.

THE use of cow's milk, water and carbohydrate mixture represents the one system of infant feeding that consistently, for three decades, has received universal pediatric recognition. No carbohydrate employed in this system of infant feeding enjoys so rich and enduring a background of authoritative clinical experience as Dextri-Maltose.

DEXTRI-MALTOSE No. 1 (with 2% sodium chloride), for normal babies.
DEXTRI-MALTOSE No. 2 (plain, salt free), permits salt modifications by the physician.
DEXTRI-MALTOSE No. 3 (with 3% potassium bicarbonate), for constipated babies.

These products are hypo-allergenic.